

**Activated Epsilon Toxin, from *Clostridium perfringens***

**Catalog No. NR-4670**

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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 ATCC® 3626™ and activated by trypsin digestion to produce NR-4670. The protein is suitable for western blots and 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 and M80837).<sup>2-4</sup> The structure of epsilon protoxin has been solved (PDB: 1UYJ).<sup>1</sup>

**Material Provided:**

Each vial of NR-4670 contains approximately 0.05 mg of epsilon toxin suspended in 0.1 M ammonium carbonate (pH 8.0). The concentration, expressed as mg per mL, is shown on the Certificate of Analysis. Considerable lot to lot variation in the specific activity of the toxin in cellular cytotoxicity assays has been observed. The CD<sub>50</sub>, expressed as a molar concentration, is shown on the Certificate of Analysis for each lot.

**Packaging/Storage:**

NR-4670 was packaged aseptically in plastic cryovials. The product is provided frozen on dry ice and should be stored at -20°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided. For long-term storage, the contributor recommends -80°C or colder.

**Functional Activity:**

NR-4670 reacts with polyclonal immunoglobulin G 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: Activated Epsilon Toxin, from *Clostridium perfringens*, NR-4670."

**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/bmbl5/index.htm](http://www.cdc.gov/biosafety/publications/bmbl5/index.htm).

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**References:**

1. Cole, A. R., et al. "*Clostridium perfringens* Epsilon-Toxin Shows Structural Similarity to the Pore-Forming Toxin Aerolysin." Nat. Struct. Mol. Biol. 11 (2004): 797-798. PubMed: 15258571. PDB: 1UYJ.
2. Hunter, S. E., et al. "Cloning and Nucleotide Sequencing of the *Clostridium perfringens* Epsilon-Toxin Gene and Its Expression in *Escherichia coli*." Infect. Immun. 60 (1992): 102-110. PubMed: 1729175. GenBank: M95206.
3. Havard, H. L., S. E. Hunter, and R. W. Titball. "Comparison of the Nucleotide Sequence and

Development of a PCR Test for the Epsilon Toxin Gene of *Clostridium perfringens* Type B and Type D." FEMS Microbiol. Lett. 76 (1992): 77–81. PubMed: 1427007. GenBank: M95206.

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4. Hunter, S.E., et al. Unpublished.

**Table 1: Predicted Protein Sequence**

1	KASYDNVDTL	IEKGRYNTKY	NYLKRMEKYY	PNAMAYFDKV	TINPQGNDY
51	INNPKVELDG	EPSMNYLEDV	YVGKALLTND	TQQEQKLKSQ	SFTCKNTDTV
101	TATTTHTVGT	SIQATAKFTV	PFNETGVSLT	TSYSFANTNT	NTNSKEITHN
151	VPSQDILVPA	NTTVEVIAYL	KKVNVKGNVK	LVGQVSGSEW	GEIPSYLAFP
201	RDGYKFSLSD	TVNKSDLNED	GTININGKGN	YSAVMGDELI	VKVRNLNTNN
251	VQEYVIPVDK	KE			