

Monoclonal Anti-Shiga Toxin 2 Subunit A (produced *in vitro*) (Similar to 11E10)

Catalog No. NR-846

For research use only. Not for human use.

Contributor:

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Product Description:

Antibody Class: IgG1κ

Mouse monoclonal antibody to the A subunit of Shiga-like toxin 2 from *Escherichia coli* (*E. coli*) was purified by protein A affinity chromatography from supernatants obtained from a mouse hybridoma clonal cell line (ATCC® CRL-1907™) that produces monoclonal antibody (MAb) 11E10.¹ The hybridoma cell line was generated by the fusion of SP2/0 myeloma cells with immunized mouse splenocytes.

The term Shiga toxin (Stx) refers to two families of related toxins: Shiga toxin/Shiga-like toxin 1 and Shiga-like toxin 2.² Shiga toxin is produced by *Shigella dysenteriae*, while Shiga-like toxin 1 and Shiga-like toxin 2 are both produced by enterohemorrhagic strains of *E. coli*. Stx are multimeric molecules that are comprised of two polypeptide subunits, A and B. The Stx B subunit is a pentamer that binds the toxin to glycolipids on host cell membranes and the entire Stx molecule can then enter the cell via endocytosis.³ Once inside the cell, the Stx A subunit undergoes proteolytic cleavage and the reduction of an internal disulfide bond to generate Stx A₁ and Stx A₂. Stx A₁ is an N-glycosidase that catalytically inactivates the 28S ribosomal RNA subunit to inhibit protein synthesis.⁴ The nucleotide sequence of the gene for the Shiga-like toxin 2 A subunit from *E. coli* has been reported (GenBank: AB035143).⁵

Material Provided:

Each vial contains approximately 50 µg of NR-846. Sodium azide (0.05%) was added to the preparation of purified monoclonal antibody as a preservative. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Packaging/Storage:

NR-846 was packaged aseptically in vials. The product is provided frozen on dry ice and should be stored at -20°C or colder immediately upon arrival. Once thawed, the unused material may be stored at 4°C. Freeze-thaw cycles should be avoided.

Functional Activity:¹

MAb 11E10 immunoprecipitates intact labeled Shiga-like toxin 2 from *E. coli* as well as the isolated A subunit, but not the isolated B subunit. MAb 11E10 neutralizes the cytotoxicity of Shiga-like toxin 2 but not Shiga-like toxin 1 or Shiga toxin. MAb 11E10 has been successfully used in a colony ELISA for the detection of bacterial colonies which produce high levels of Shiga-like toxin 2. Applications: ELISA, Western blot, immunoprecipitation, cytotoxicity neutralization assay, colony ELISA.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: Monoclonal Anti-Shiga Toxin 2 Subunit A (produced *in vitro*) (Similar to 11E10), NR-846."

Biosafety Level: 1

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. 4th ed. Washington, DC: U.S. Government Printing Office, 1999. HHS Publication No. (CDC) 93-8395. This text is available online at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm.

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2. Sandvig, K. "Shiga Toxins." Toxicon 39 (2001): 1629–1635. PubMed: 11595626.
3. Sandvig, K., et al. "Endocytosis from Coated Pits of Shiga Toxin: A Glycolipid-binding Protein from *Shigella dysenteriae* 1." J. Cell Biol. 108 (1989): 1331–1343. PubMed: 2564398.
4. Skinner, L. M. and M. P. Jackson. "Investigation of Ribosome Binding by the Shiga Toxin A1 Subunit, Using Competition and Site-Directed Mutagenesis." J. Bacteriol. 179 (1997): 1368–1374. PubMed: 9023224.
5. Yokoyama, S., et al. "Nucleotide Sequence Analysis of Shiga (-like) Toxins from an Enterohemorrhagic *Escherichia coli* Isolated from Gifu Outbreak." Unpublished. GenBank: AB035143.
6. Downes, F. P., et al. "Affinity Purification and Characterization of Shiga-Like Toxin II and Production of Toxin-Specific Monoclonal Antibodies." Infect. Immun. 56 (1988): 1926–1933. PubMed: 3294179.

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