

Shiga Toxin Type 2 Subunit B, Recombinant from *Escherichia coli*

Catalog No. NR-49262

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Contributor and Manufacturer:

BEI Resources

Product Description:

The term Shiga toxin (Stx) refers to two families of related toxins: Shiga toxin/Shiga-like toxin 1 and Shiga-like toxin 2.^{1,2} Shiga toxin is produced by *Shigella dysenteriae*, while Shiga-like toxin 1 and Shiga-like toxin 2 are both produced by enterohemorrhagic strains of *Escherichia 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 sequences of the genes for the Shiga-like toxin 1 B subunit from *E. coli* (GenBank: AB035142)⁵ and the Stx B subunit from *S. dysenteriae* (GenBank: M24352)⁶ have been reported.

NR-49262 is a recombinant form of the B subunit of Shiga toxin type 2 (Stx2). The amino acid sequence includes a C-terminal hexa-histidine tag and amino acid residues 20 to 89 of the Stx2 subunit B protein (GenPept: AAD25446).⁷ The recombinant protein was expressed in *Escherichia coli* and purified by nickel affinity chromatography.

NR-49262 has a theoretical molecular weight of approximately 8,640 daltons. The predicted amino acid sequence of NR-49262 is shown below in Table 1.

Material Provided:

Each vial of NR-49262 contains approximately 1 mg of recombinant Stx2 subunit B suspended in phosphate buffered saline (pH 7.4). The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Packaging/Storage:

NR-49262 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen on dry ice and should be stored at -80°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided.

Functional Activity:

NR-49262 reacts with rabbit polyclonal antibody to the

recombinant B subunit of Stx2 (BEI Resources NR-9352). The B subunit is not cytotoxic in isolation. See Certificate of Analysis for details.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Shiga Toxin Type 2 Subunit B, Recombinant from *Escherichia coli*, NR-49262."

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. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

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8. Perera, L. P., et al. "Identification of Three Amino Acid Residues in the B Subunit of Shiga Toxin and Shiga-Like Toxin Type II That Are Essential for Holotoxin Activity." *J. Bacteriol.* 173 (1991): 1151-1160. PubMed: 1991714.

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Table 1 – Predicted Protein Sequence					
1	ADCAK	GKIEF	SKYNEDDTFT	VKVDGKEYWT	SRWNLQPLLQ SAQLTGMTVT
51	IKSSTCESGS	GFAEVQFNND	<u>HHHHHH</u>		

Non-shiga toxin residues are underlined.