

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

### Catalog No. NR-4677

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#### Contributor:

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#### 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.<sup>1,2</sup> 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.<sup>3</sup> Once inside the cell, the Stx A subunit undergoes proteolytic cleavage and the reduction of an internal disulfide bond to generate Stx A<sub>1</sub> and Stx A<sub>2</sub>. Stx A<sub>1</sub> is an N-glycosidase that catalytically inactivates the 28S ribosomal RNA subunit to inhibit protein synthesis.<sup>4</sup> The nucleotide sequences of the genes for the Shiga-like toxin 1 B subunit from *E. coli* (GenBank: AB035142)<sup>5</sup> and the Stx B subunit from *S. dysenteriae* (GenBank: M24352)<sup>6</sup> have been reported.

NR-4677 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).<sup>7</sup> The recombinant protein was expressed in *Escherichia coli* and purified by nickel affinity chromatography. NR-4677 has a theoretical molecular weight of approximately 8,640 daltons. The predicted amino acid sequence of NR-4677 is shown below in Table 1.

#### Material Provided:

Each vial of NR-4677 lot 59019949 contains approximately 1 mg of recombinant Stx2 subunit B suspended in phosphate buffered saline (pH 7.4). Lot 57680189, which is no longer available, contained 0.1 mg per vial. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

#### Packaging/Storage:

NR-4677 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.

#### Functional Activity:

NR-4677 reacts with rabbit polyclonal antibody to the recombinant B subunit of Stx2 (BEI Resources NR-9352).

#### Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: Shiga Toxin Type 2 Subunit B, Recombinant from *Escherichia coli*, NR-4677."

#### 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, 2007; see [www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm](http://www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm).

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**References:**

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Table 1 – Predicted Protein Sequence					
1	<u>ADCAK</u> GKIEF	<u>SKYNED</u> DTFT	<u>VKVDG</u> KEYWT	<u>SRWNL</u> QPLLQ	<u>SAQLT</u> GMTVT
51	<u>IKSST</u> CEGS	<u>GFAEV</u> QFNND	<u>HHHHH</u> H		

Non-shiga toxin residues are underlined.