

**Shiga Toxin Type 2 Variant C (Stx2c),
Recombinant from *Escherichia coli***

Catalog No. NR-13422

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Contributor and Manufacturer:

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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.^{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* (*E. coli*). Shiga toxins are multimeric molecules that are comprised of two polypeptide subunits, A and B. There are several variants of Shiga-like toxin 2, designated a-h, that display differences in potency.^{3,4}

NR-13422 is a recombinant form of Shiga-like toxin 2, variant c (Stx2c). Recombinant Stx2c was expressed in *E. coli* and purified by antibody affinity chromatography. The signal sequence was removed from both subunits.

NR-13422 subunit A has a theoretical molecular weight of 33194 daltons, and subunit B, 7772 daltons. The predicted amino acid sequences of the deposited protein subunits are shown below in Tables 1 and 2.

Material Provided:

Each vial of NR-13422 contains approximately 10 µg of rStx2c 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-13422 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. For long-term storage, -60°C or colder is recommended. Repeated freeze-thaw cycles should be avoided.

Functional Activity:

NR-13422 reacts with rabbit polyclonal antibody to rStx2.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH:

Shiga Toxin Type 2 Variant C (Stx2c), Recombinant from *Escherichia coli*, NR-13422."

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/bmb15/index.htm.

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References:

1. Sandvig, K. "Shiga Toxins." *Toxicon* 39 (2001): 1629-1635. PubMed: 11595626.
2. O'Loughlin, E. V. and R. M. Robins-Browne. "Effect of Shiga Toxin and Shiga-like Toxins on Eukaryotic Cells."

- Microbes Infect. 3 (2001): 493-507. PubMed: 11377211.
3. Schmitt, C. K., et al. "Two Copies of Shiga-Like Toxin II-Related Genes Common in Enterohemorrhagic *Escherichia coli* Strains Are Responsible for the Antigenic Heterogeneity of the O157:H- Strain E32511." Infect. Immun. 59 (1991): 1065-1073. PubMed: 1997410.
 4. Fuller, C. A., et al. "Shiga Toxin Subtypes Display Dramatic Differences in Potency." Infect. Immun. 79 (2011): 1329-1337. PubMed: 21199911.

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Table 1 – Predicted Protein Sequence Subunit A						
1	REFTIDFSTQ	QSYVSSLNSI	RTEISTPLEH	ISQGTTSVSV	INHTPPGSYF	
51	AVDIRGLDVY	QARFDHLRLI	IEQNNLYVAG	FVNTATNTFY	RFSDFTHISV	
101	PGVTTVSMTT	DSSYTTLQRV	AALERSGMQI	SRHSLVSSYL	ALMEFSGNTM	
151	TRDASRAVLR	FVTVTAEALR	FRQIQREFRQ	ALSETAPVYT	MTPGDVDLTL	
201	NWGRISNVLP	EYRGEDGVRV	GRISFNNISA	ILGTVAVILN	CHHQGARSVR	
251	AVNEESQPEC	QITGDRPVIK	INNTLWESNT	AAAFLNKRSQ	FLYTTGK	

Table 2 – Predicted Protein Sequence Subunit B ¹						
1	ADCAKGKIEF	SKY <u>N</u> EN <u>D</u> TFT	VKV <u>A</u> GKEYWT	SRWNLQPLLQ	SAQLTGMTVT	
51	IKSSTCESGS	GFAEVQFNND				

¹Amino acid differences from the wild type sequence are underlined. There is an additional amino acid difference in the signal peptide, which is not part of NR-13422.