

**Staphylococcal Enterotoxin B Toxoid,  
Chemically Inactivated from  
*Staphylococcus aureus* subsp. *aureus***

**Catalog No. NR-44235**

This reagent is the tangible property of the U.S. Government.

**For research use only. Not for human use.**

**Contributor and Manufacturer:**

Alison D. O'Brien, Ph.D., Chairperson, and James F. Sinclair, Ph.D., Laboratory Supervisor, Department of Microbiology and Immunology, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA

**Product Description:**

Staphylococcal enterotoxin B (SEB) was extracted from a preparation of *Staphylococcus aureus* (*S. aureus*) subsp. *aureus*, strain FDA 243 (ATCC<sup>®</sup> 14458<sup>™</sup>)<sup>1</sup>, purified by ion exchange chromatography, and chemically inactivated with formaldehyde. The toxin has a theoretical molecular weight of approximately 28368 daltons. The predicted amino acid sequence is shown below in Table 1.

SEB is one of several exotoxins produced by *S. aureus* subsp. *aureus*. *S. aureus* subsp. *aureus* is a ubiquitous, nonmotile, Gram-positive coccus found on the skin and mucous membranes of humans and animals. The staphylococcal exotoxins are characterized as enterotoxins, because they exert their effect on the intestinal tract when ingested. SEB has a broad spectrum of biological activity, and depending on the portal of entry (e.g., gastrointestinal, respiratory, or mucosal), the toxin will elicit a different clinical syndrome. SEB is the enterotoxin that most commonly causes classic food poisoning. The amino acid sequence of SEB from *S. aureus* subsp. *aureus*, strain FDA 243 (ATCC<sup>®</sup> 14458<sup>™</sup>) has been determined (GenPept: AAW19659).<sup>2</sup> The crystal structure of SEB has been solved to 1.48 Å (PDB 3SEB).<sup>3</sup>

**Material Provided:**

Each vial of NR-44235 contains approximately 50 µg of SEB toxoid in phosphate buffered saline (pH ~ 7.4). The concentration is shown on the Certificate of Analysis.

**Packaging/Storage:**

NR-44235 was packaged aseptically in plastic cryovials. The product is provided frozen on dry ice and should be stored at -70°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided.

**Functional Activity:**

NR-44235 reacts with rabbit polyclonal antibody to SEB using western blot analysis.

**Citation:**

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Staphylococcal Enterotoxin B Toxoid, Chemically Inactivated from *Staphylococcus aureus* subsp. *aureus*, NR-44235."

**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](http://www.cdc.gov/biosafety/publications/bmb15/index.htm).

**Disclaimers:**

You are authorized to use this product for research use only. It is not intended for human use.

Use of this product is subject to the terms and conditions of the BEI Resources Material Transfer Agreement (MTA). The MTA is available on our Web site at [www.beiresources.org](http://www.beiresources.org).

While BEI Resources uses reasonable efforts to include accurate and up-to-date information on this product sheet, neither ATCC<sup>®</sup> nor the U.S. Government makes any warranties or representations as to its accuracy. Citations from scientific literature and patents are provided for informational purposes only. Neither ATCC<sup>®</sup> nor the U.S. Government warrants that such information has been confirmed to be accurate.

This product is sent with the condition that you are responsible for its safe storage, handling, use and disposal. ATCC<sup>®</sup> and the U.S. Government are not liable for any damages or injuries arising from receipt and/or use of this product. While reasonable effort is made to ensure authenticity and reliability of materials on deposit, the U.S. Government, ATCC<sup>®</sup>, their suppliers and contributors to BEI Resources are not liable for damages arising from the misidentification or misrepresentation of products.

**Use Restrictions:**

**This material is distributed for internal research, non-commercial purposes only.** This material, its product or its derivatives may not be distributed to third parties. Except as performed under a U.S. Government contract, individuals contemplating commercial use of the material, its products or its derivatives must contact the contributor to determine if a license is required. U.S. Government contractors may need a license before first commercial sale.

**References:**

1. Casman, E. P., M. S. Bergdoll, and J. Robinson. "Designation of Staphylococcal Enterotoxins." J.

1. Bacteriol. 85 (1963): 715-716. PubMed: 14042955.
2. Direct Submission.
3. Papageorgiou, A. C., H. S. Tanter, and K. R. Acharya. "Crystal Structure of Microbial Superantigen Staphylococcal Enterotoxin B at 1.5 Å Resolution: Implications for Superantigen Recognition by MHC Class II Molecules and T-cell Receptors." J. Mol. Biol. 277 (1998): 61-79. PubMed: 9514739. PDB: 3SEB.

ATCC® is a trademark of the American Type Culture Collection.



**Table 1 – Predicted Protein Sequence for SEB Toxoid**

1	ESQPDPKPDE	LHKSSKFTGL	MENMKVLYDD	NHVSAINVKS	IDQFLYFDLI
51	YSIKDTKLG	YDNVRVEFKN	KDLADKYKDK	YVDVFGANY	YQCYFSKKTN
101	DINSHQTDKR	KTCMYGGVTE	HNGNQLDKYR	SITVRVFEDG	KNLLSFDVQT
151	NKKKVTAQEL	DYLTRHYLVK	NKKLYEFNNS	PYETGYIKFI	ENENSFWYDM
201	MPAPGDKFDQ	SKYLMMYNDN	KMVDSKDVKI	EVYLTTKKK	