

SUPPORTING INFECTIOUS DISEASE RESEARCH

# **Product Information Sheet for NR-33151**

# **β-Cyclodextrin Derivative IB201** (ANBOβCD)

Catalog No. NR-33151

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

#### Contributor:

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#### Manufacturer:

Innovative Biologics, Inc.

#### **Product Description:**

β-Cyclodextrin (β-CD) is a cyclic molecule comprising of seven D-glucose units and having seven-fold symmetry. Persubstituted β-CD derivatives are small molecules with a seven-fold symmetry that mirrors the heptameric, poreforming toxins that are essential in the mechanism of action of several bacterial pathogens. Persubstituted β-CD derivatives can be utilized in a strategy to inhibit pore-forming toxins, which is based on the blocking of the target pore with molecules having the same symmetry as the pore itself.  $^{1,2}$ 

NR-33151 is a hepta-6-substituted  $\beta$ -CD derivative {per-6-[(N^{\alpha}-Boc-L-ornithinyl)amino]- $\beta$ -CD (ANBO $\beta$ CD); IB201} designed to target pore-forming toxins. NR-33151 has a theoretical molecular weight of approximately 2,628 g/mol. The structure of NR-33151 is shown below (Figure 1).

#### **Material Provided:**

Each vial contains approximately 0.8 mg of NR-33151 in dimethylsulfoxide (DMSO).

<u>Note</u>: Once product is thawed, vortex to ensure homogeneity.

#### Packaging/Storage:

NR-33151 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen and should be stored at -20°C or colder immediately upon arrival. Excessive freeze-thaw cycles should be avoided.

#### **Functional Activity:**

ANBOBCD inhibits  $\alpha$ -hemolysin ( $\alpha$ -HL), one of the key virulence factors produced by Staphylococcus aureus (S. aureus), and the level of its expression directly correlates with virulence. It protected against  $\alpha$ -HL cytotoxicity and prevented  $\alpha$ -HL-mediated alveolar epithelial cell injury. ANBOBCD also blocks ion conductance through the pores formed by  $\alpha$ -HL in artificial lipid membranes. The efficacy of ANBOBCD was successfully tested in a mouse model of S. aureus pneumonia.  $\alpha$ 

#### Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH:  $\beta$ -Cyclodextrin Derivative IB201 (ANBO $\beta$ CD), NR-33151."

#### 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:

- 1. Innovative Biologics, Inc.
- 2. Karginov, V. A., et al. "Blocking Anthrax Lethal Toxin at

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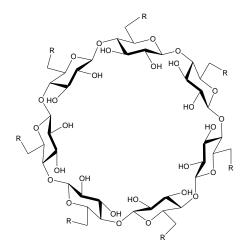
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- the Protective Antigen Channel by Using Structure-inspired Drug Design." <u>Proc. Natl. Acad. Sci. U.S.A.</u> 102 (2005): 15075-15080. PubMed: 16214885.
- Karginov, V., et al. "Inhibition of S. aureus α-hemolysin and B. anthracis Lethal Toxin by β-cyclodextrin Derivatives." Bioorg. Med. Chem. 15 (2007): 5424-5431. PubMed: 17572091.
- Ragle, B. E., V. A. Karginov, and J. Wardenburg. "Prevention and Treatment of Staphylococcus aureus Pneumonia with a β-Cyclodextrin Derivative." <u>Antimicrob. Agents Chemother.</u> 54 (2010): 298-304. PubMed: 19805564.

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### Figure 1



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