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, pore-forming 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 β-CD derivative {per-6-[(N^{α}-Boc-L-ornithinyl)amino]-β-CD (ANBOβCD); 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).

Note: 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:
ANBOβCD inhibits α-hemolysin (α-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 α-HL cytotoxicity and prevented α-HL-mediated alveolar epithelial cell injury. ANBOβCD also blocks ion conductance through the pores formed by α-HL in artificial lipid membranes.[3] The efficacy of ANBOβCD was successfully tested in a mouse model of *S. aureus* pneumonia.[4]

Citation:
Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: β-Cyclodextrin Derivative IB201 (ANBOβCD), 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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3. 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.
4. Ragle, B. E., V. A. Karginov, and J. Wardenburg. "Prevention and Treatment of *Staphylococcus aureus* Pneumonia with a β-Cyclodextrin Derivative." Antimicrob. Agents Chemother. 54 (2010): 298-304. PubMed: 19805564.

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Figure 1