

**Anthrax Protective Antigen (PA),
Recombinant from *Escherichia coli***

Catalog No. NR-3780

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For research use only. Not for use in humans.

Contributor and Manufacturer:

U.S. Department of Defense Joint Vaccine Acquisition Program

Product Description:

A recombinant form of the anthrax protective antigen (PA) (GenPept: [WP_000746486](#)) was produced in *Escherichia coli* and purified using conventional chromatographic techniques.¹ The predicted protein sequence is shown in Figure 1. NR-3780 has a theoretical molecular weight of 82,637 daltons.

The anthrax PA binds to surface receptors on the mammalian cell membrane and is cleaved by a cellular protease to a 63 kDa protein. When combined with recombinant lethal factor (LF) or edema factor (EF), the cleaved PA binds the toxin enzyme component and mediates its transportation into the cytosol where it exerts its pathogenic effect.²

Material Provided:

Each vial contains approximately 0.50 mL of NR-3780 in 20 mM sodium phosphate buffer (pH 8) and 150 mM NaCl. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Packaging/Storage:

NR-3780 was packaged aseptically, in screw-capped plastic cryovials. This product is provided frozen on dry ice and should be stored at -80°C or colder immediately upon arrival. For optimal long-term storage, aliquoting and freezing the material at -80°C or colder is recommended. Repeated freeze-thaw cycles of this product should be avoided.

Activation:

In certain systems, this product may require trypsinization to generate the active C-terminal 63 kDa fragment.¹

Tissue Culture Application:

Tissue culture media containing glutamate must be fresh. Ammonium ion released when glutamate breaks down may prevent acidification of the endosome thereby inhibiting translocation of LF or EF into the cytosol.² A stable form of glutamate may be used.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Anthrax Protective Antigen (PA), Recombinant from *Escherichia coli*, NR-3780."

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/bmbli5/index.htm.

Disclaimers:

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References:

1. Little, S., Personal Communication.
2. Bhatnagar, R., et al. "Calcium is Required for the Expression of Anthrax Lethal Toxin Activity in the Macrophagelike Cell Line J774A.1." [Infect. Immun.](#) 57 (1989): 2107–2114. PubMed: 2499545.

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Figure 1: Predicted Protein Sequence

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1  MKKRKVLIPL MALSTILVSS TGNLEVIQAE VKQENRLLNE SESSSQGLLG
51  YYFSDLNFQA PMVVTSSSTG DLSIPSSELE NIPSENQYFQ SAIWSGFIKV
101 KKSDEYTFAT SADNHVTMWV DDQEVINKAS NSNKIRLEKG RLYQIKIQYQ
151 RENPTEKGLD FKLYWTDSON KKEVISSDNL QLPELKQKSS NSRKKRSTSA
201 GPTVPDRDND GIPDSLEVEG YTVDVKNKRT FLSPWISNIH EKKGLTKYKS
251 SPEKWSTASD PYSDFEKVTG RIDKNVSPEA RHPLVAAYPI VHVDMENIIL
301 SKNEDQSTQN TDSQTRTISK NTSTSRTHTS EVHGNAEVHA SFFDIGGSVS
351 AGFSNSNSST VAIDHSLSLA GERTWAETMG LNTADTARLN ANIRYVNTGT
401 APIYNVLPTT SLVLGKNQTL ATIKAKENQL SQILAPNNYY PSKNLAPIAL
451 NAQDDFSSTP ITMNYNQFLE LEKTKQLRLD TDQVYGNIAI YNFENGRVRV
501 DTGSNWSEVL PQIQETTARI IFNGKDLNLV ERRIAAVNPS DPLETTKPDM
551 TLKEALKIAF GFNEPNGNLQ YQGDITEFD FNFDQQTSON IKNQLAELNA
601 TNIYTVLDKI KLNAMNILI RDKRFHYDRN NIAVGADES VKEAHREVIN
651 SSTEGLLLNI DKDIRKILSG YIVEIEDTEG LKEVINDRYD MLNISSLRQD
701 GKTFIDFKKY NDKLPLYISN PNYKVNVA VTKENTIINPS ENGDTSTNGI
751 KKILIFSCKG YEIG

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Anthrax Protective Antigen – Residues 1 to 764 (representing residues 1 to 764)