N1 Neuraminidase (NA) Protein with N-Terminal Histidine Tag from Influenza Virus, A/Puerto Rico/8/1934 (H1N1), Recombinant from Baculovirus

Catalog No. NR-19235

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Contributor and Manufacturer:

BEI Resources

Product Description:

A recombinant form of the N1 neuraminidase (NA) protein from influenza A virus, A/Puerto Rico/8/1934 (H1N1) was produced in insect cells using a baculovirus expression vector system and purified by nickel affinity chromatography under denaturing conditions. NR-19235 contains the predicted ectodomain coding region of the N1 neuraminidase (NA) protein from influenza A virus, A/Puerto Rico/8/1934 (H1N1) (GenPept: ABD77678) fused to a synthetic gene segment encoding an N-terminal octa-histidine tag followed by a 43 amino acid tetramerization domain from vasodilator-stimulated phosphoprotein (VASP) and a thrombin cleavage site, as described for the 1918 pandemic virus.[1,2] The predicted protein sequence is shown in Figure 1. NR-19235 has a theoretical molecular weight of approximately 50.5 kilodaltons. The full-length NA precursor protein is 454 residues and the crystal structure has been solved at 2.50 Å resolution (PDB: 2HTY).[3]

NR-19235 lots 64123709 and 70041699 were expressed from the same recombinant baculovirus vector as BEI Resources NR-42002, which was purified in the soluble form from cell supernatants and is functionally active.

Material Provided:

Each vial contains approximately 50 to 150 µg of purified recombinant NA protein in buffer. The concentration, expressed as mg per mL, and buffer composition are shown on the Certificate of Analysis.

Packaging/Storage:

NR-19235 was packaged aseptically in cryovials. The product is provided frozen on dry ice and should be stored at -20°C or colder immediately upon arrival. Freeze-thaw cycles should be minimized. Note: NR-19235 is not stable long-term at 4°C.

Functional Activity:

NR-19235 has not been tested for enzymatic activity. Previous work at BEI Resources indicated that other influenza virus neuraminidases purified under denaturing conditions and refolded by dialysis are not able to cleave the fluorogenic substrate 2'-(4-methylumbelliferyl)-α-D-N-acetylneuraminic acid (4-MUNANA).[4]

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: N1 Neuraminidase (NA) Protein with N-Terminal Histidine Tag from Influenza Virus, A/Puerto Rico/8/1934 (H1N1), Recombinant from Baculovirus, NR-19235."

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. 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

1. Kühnel, K., et al. "The VASP Tetramerization Domain is a Right-Handed Coiled Coil Based on a 15-Residue Repeat." Proc. Natl. Acad. Sci. USA 101 (2004): 17027-17032. PubMed: 15569942.

BEI Resources
www.beiresources.org

E-mail: contact@beiresources.org
Tel: 800-359-7370
Fax: 703-365-2898

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2. Xu, X., et al. "Structural Characterization of the 1918 Influenza Virus H1N1 Neuraminidase." J. Virol. 82 (2008): 10493-10501. PubMed: 18715929.
3. Russell, R. J., et al. "The Structure of H5N1 Avian Influenza Neuraminidase Suggests New Opportunities for Drug Design." Nature 443 (2006): 45-49. PubMed: 16915235.
4. Wetherall, N. T., et al. "Evaluation of Neuraminidase Enzyme Assays Using Different Substrates to Measure Susceptibility of Influenza Virus Clinical Isolates to Neuraminidase Inhibitors: Report of the Neuraminidase Inhibitor Susceptibility Network." J. Clin. Microbiol. 41 (2003): 742-750. PubMed: 12574276.

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Figure 1: Predicted Protein Sequence

1 ADPHHHHHHH HSSSDYSDLQ RVKQELLEEV KKELQKVKEE IIEAFVQELR
51 KRGSLVPRGS PSRSEFVILT GNSSLCPIRG WAIYSKDNSI RIGSKGDVFV
101 IREPFISCSH LECRTFFLTQ GALLNDKHSS GTVKDRSPYR ALMSCPVGEA
151 PSPYNSRFES VAWSASACHD GMGWLTIGIS GPDNGAVAVL KYNGIITETI
201 KSWRKKILRT QESECACVNG SCFTIMTDGP SDGLASYKIF KIEKGKVTKS
251 IELNAPNSHY EECSCYPDTG KVMCVCRDNW HGSNRPWVSF DQNLDYQIGY
301 ICSGVFGDNP RPEDGTGSCG PVYVDGANGV KGFSYRYGNG VWIGRTKSHS
351 SRHGFEMIWD PNGWTETDSK FSVRQDVVAM TDWSGYSGSF VQHPELTGLD
401 CMRPCFWVEL IRGRPKEKTI WTSASSISFC GVNSDTVDWS WPDGAELPFS
451 IDK

Plasmid-derived amino acids – Residues 1 to 3 and 61 to 66
Octa-histidine Tag – Residues 4 to 11
Tetramerization domain – **Residues 12 to 54**
Thrombin cleavage sequence – Residues 55 to 60
HA protein – Residues 67 to 453 (represents amino acid residues 68 to 454)

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