N1 Neuraminidase (NA) Protein with N-Terminal Histidine Tag from Influenza Virus, A/New Caledonia/20/1999 (H1N1), Recombinant from Baculovirus

Catalog No. NR-43779

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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/New Caledonia/20/1999 (H1N1) containing an N-terminal histidine tag was produced in Sf9 insect cells using a baculovirus expression vector system and purified by nickel affinity chromatography. The predicted ectodomain coding region of the NA gene was 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 full-length NA precursor protein is 470 residues (GenPept: AFO65030). The predicted protein sequence of NR-43779 is shown in Figure 1. NR-43779 has a theoretical molecular weight of approximately 50.46 kilodaltons. The crystal structure of the 1918 human N2 NA precursor has been solved at 2.40 Å resolution (PDB: 2HT8).

Material Provided:

Each vial contains approximately 100 µg of purified recombinant NA protein in buffer. The protein content in micrograms, the concentration, expressed as micrograms per milliliter, and buffer composition are shown on the Certificate of Analysis.

Packaging/Storage:

Purified recombinant NA protein was packaged aseptically in screw-capped plastic cryovials. This product is provided frozen and should be stored at -20°C or colder immediately upon arrival. Multiple freeze-thaw cycles should be avoided.

Functional Activity:

NR-43779 was demonstrated to be functionally active based on its ability to cleave the fluorogenic substrate 2'-(4-methylumbelliferyl)-α-D-N-acetylneuraminic acid (4-MUNANA).[3]

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/New Caledonia/20/1999 (H1N1), Recombinant from Baculovirus, NR-43779."

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.
2. Xu, X., et al. "Structural Characterization of the 1918 Influenza Virus H1N1 Neuraminidase." J. Virol. 82 (2008): 10493-10501. PubMed: 18715929.
3. 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

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Inhibitor Susceptibility Network." J. Clin. Microbiol. 41 (2003): 742-750. PubMed: 12574276.

Support Provided by NIAID

Figure 1: Predicted Protein Sequence

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1     ADPHHHHHHH HSSSDYSDLQ RVKQELLEEV KKELQKVKEE IIEAFVQELR
51    KRGSLVPRGS PSRSEFVTLA GNSSLCSISG WAIYTKDNSI RIGSKGDVFV
101   IREPFISCSH LECRTFFLTQ GALLNDKHSN GTVKDRSPYR ALMSCPLGEA
151   PSPYNSKFES VAWSASACHD GMGWLTIGIS GPDNGAVAVL KYNGIITETI
201   KSWKKRILRT QESECVCVNG SCFTIMTDGP SNGAASYKIF KIEKGKVTKS
251   IELNAPNFHY EECSCYPDTG TVMCVCRDNW HGSNRPWVSF NQNLDYQIGY
301   ICSGVFGDNP RPKDGEGSCN PVTVDGADGV KGFSYKYGNG VWIGRTKSNR
351   LRKGFEMIWD PNGWTDTDSD FSVKQDVVAI TDWSGYSGSF VQHPELTGLD
401   CIRPCFWVEL VRGLPRENTT IWTSGSSISF CGVNSDTANW SWPDGAELPF
451   TIDK
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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
NA protein – Residues 67 to 454 [represents amino acid residues 83 to 470 of the native NA protein (GenPept: AFO65030)]

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