Recombinant SARS-CoV-2 NSP7 His-tag

Catalog Number: 10632-CV

DESCRIPTION

Source	*E. coli*-derived sars-cov-2 NSP7 protein Ser1-Gln83 Accession # YP_009725303.1 with C-terminal 3CP and 6-His tag
N-terminal Sequence Analysis	Ser1
Predicted Molecular Mass	11 kDa

SPECIFICATIONS

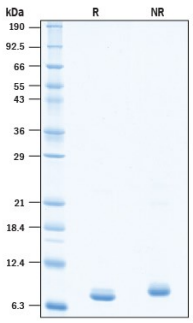
SDS-PAGE	7-8 kD, under reducing conditions
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Supplied as a 0.2 µm filtered solution in HEPES, NaCl and TCEP. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping	The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 6 months from date of receipt, -20 to -70 °C as supplied. • 3 months, -20 to -70 °C under sterile conditions after opening.

DATA

SDS-PAGE



Recombinant SARS-CoV-2 NSP7 His-tag Protein SDS-PAGE. 2 µg/lane of Recombinant SARS-CoV-2 NSP7 His-tag (Catalog # 10632-CV) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 7-8 kDa under reducing conditions.

BACKGROUND

Non-structural protein 7 (NSP7) is one of several functional proteins released by ORF1a-encoded protease cleavage of the pp1a and pp1ab replicase polyproteins expressed from the coronavirus (CoV) genome (1). The NSPs are involved in the replication and transcription of the viral RNA and not incorporated within the virion particles. Coronaviruses include various highly pathogenic strains such as SARS-CoV, MERS-CoV and SARS-CoV-2 that have had significant impact on humans in addition to strains that have negatively impacted livestock. NSP7 is a small 83 amino acid protein that is highly conserved across coronaviruses (1). The NSP7 monomers are composed of a central core N-terminal tri-helical bundle with an additional short C-terminal helix (2). The monomeric units associate to form a large hexadecameric structure with NSP8 (2) where layers of NSP7 fill the spaces in between NSP8 units. The supercomplexes are stacked to form a channel with electrostatic properties that could allow RNA to pass through the channel to facilitate efficient replication and transcription. The NSP7/NSP8 supercomplex was thereby proposed to function as a primase for the viral RNA-dependent RNA polymerase (RdRp), NSP12 (3). In SARS-CoV-2, the RdRp has been shown to have little activity without NSP8/7 as cofactors (4) making NSP7/NSP8 critical for viral polymerase activity. NSP7 has also been shown to interact with several other viral NSP proteins, including NSP5, NSP9, and NSP13 (5) as well as multiple host cell proteins involved in membrane trafficking, signaling, and electron transport including potential drug targets such as COMT and PTGES (6).

References:

1. Snijder, E.J. *et al.* (2016) Adv. Virus Res. **96**:59.
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3. Subissi, L. *et al.* (2014) Antiviral Res. **101**:122.
4. Yin, W. *et al.* (2020) Science **368**:1499.
5. von Brunn, A. *et al.* (2007) PLoS One **2**:e459.
6. Gordon, D.E. *et al.* (2020) Nature **583**:459.

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