Recombinant SARS-CoV-2 NSP8 His-tag

Catalog Number: 10633-CV

DESCRIPTION

Source	*E. coli*-derived sars-cov-2 NSP8 protein Ala1-Gln198 Accession # YP_009725304.1 With a C-terminal 3C protease cleavage site and 8-His tag
N-terminal Sequence Analysis	Ala1
Predicted Molecular Mass	24 kDa

SPECIFICATIONS

SDS-PAGE	24 kDa, under reducing conditions.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>90%, 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 and NaCl. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping	The product is shipped with polar packs. 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.

BACKGROUND

Non-structural protein 8 (NSP8) 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-CoV2 that have had significant impact on humans as well as strains that have negatively impacted livestock. NSP8 is a small 198 amino acid protein that forms a dimer with NSP7 and subsequently assembles into a large hexadecameric structure (2). The NSP8 sequence is highly conserved across coronaviruses (2). The NSP8 monomers in each of two asymmetric units can adopt two different conformations: a "golf-club like" structure with the N-terminal shaft and C-terminal head or a bent N-terminal shaft and C-terminal head domain (2). The units stack to form a supercomplex like bricks with layers of NSP7 filling the spaces in between. The supercomplexes are stacked to form a channel with electrostatic properties that would allow RNA to pass through the channel, likely to facilitate efficient replication and transcription. NSP8 was also shown to be able to polymerize small oligomers in a sequence-specific fashion and was consequently proposed to act as an RNA primase for the viral RNA-dependent RNA polymerase (RdRp), NSP12, in SARS-CoV (3). In SARS-CoV- 2, RdRp has been shown to have little activity without NSP8/7 acting as cofactors to form a complex (4) making NSP8 critical for viral polymerase activity. NSP8 was shown to interact with several other viral NSP proteins, including NSP2 and NSP9, (5) as well as multiple host cell proteins (6). NSP8 showed interaction with 3 different signal recognition particle (SRP) host cell proteins suggesting the virus hijacks the SEC61-mediated protein translocation pathway for entry into the endoplasmic reticulum and NSP8 may be involved in targeting (6).

References:

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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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