PRODUCT INFORMATION

SARS-CoV-2 nsp1 (recombinant)

Item No. 40879

Overview and Properties

Synonyms:	SARS-CoV-2 Host Translation Inhibitor nsp1, SARS-CoV-2 Non-structural Protein 1, Severe Acute Respiratory Syndrome Coronavirus 2 nsp1
Source:	Recombinant SARS-CoV-2 N-terminal His-tagged nsp1 expressed in *E. coli*
Amino Acids:	13-128
Uniprot No.:	P0DTD1
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90%
Supplied in:	50 mM Tris-HCl, pH 7.5, 200 mM sodium chloride, and 20% glycerol
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Protein Concentration:	***batch specific*** mg/ml
Special Conditions:	Avoid repeated freeze/thaw cycles.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Description

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an enveloped positive-stranded RNA virus and the causative agent of COVID-19, a primarily respiratory illness characterized by fever, cough, and shortness of breath that can lead to life-threatening complications.[1-5] The SARS-CoV-2 genome contains approximately 30 kilobases and 14 open reading frames (ORFs) that encode four structural proteins: spike, envelope, membrane, and nucleocapsid, as well as 16 non-structural proteins and 9 accessory factors.[6] SARS-CoV-2 non-structural protein 1 (nsp1) is a multifunctional protein and virulence factor that inhibits host mRNA translation, including translation of antiviral proteins such as IFN-β and IFN-λ1.[7-9] It is composed of an N-terminal domain and a C-terminal domain connected *via* an unstructured 20-amino acid residue linker.[9,10] The SARS-CoV-2 nsp1 C-terminal domain binds to the mRNA entry site of the 40S subunit of the host ribosome, which prevents host mRNA from entering, while the N-terminal binds to the 40S decoding center preventing accurate alignment of tRNA and mRNA.[8-10] SARS-CoV-2 nsp1 also induces host mRNA degradation, prevents mRNA export from the nucleus to the cytoplasm, and binds to pre-rRNA in the nucleolus to disrupt rRNA biogenesis.[7,9,11,12]

References

1. Kandeel, M., Ibrahim, A., Fayez, M., *et al. J. Med. Virol.* **92(6)**, 660-666 (2020).
2. Lu, R., Zhao, X., Li, J., *et al. Lancet* **395(10224)**, 565-574 (2020).
3. Meo, S.A., Alhowikan, A.M., Al-Khlaiwi, T., *et al. Eur. Rev. Med. Pharmacol. Sci.* **24(4)**, 2012-2019 (2020).
4. Klok, F.A., Kruip, M.J.H.A., van der Meer, N.J.M., *et al. Thromb. Res.* **191**, 145-147 (2020).
5. Yang, F., Shi, S., Zhu, J., *et al. J. Med. Virol.* **92(11)**, 2511-2515 (2020).
6. Romano, M., Ruggiero, A., Squeglia, F., *et al. Cells* **9(5)**, 1267 (2020).
7. Yerlici, V.T., Astori, A., Kejiou, N.S., *et al. Cell Rep.* **43(3)**, 113891 (2024).
8. Thoms, M., Buschauer, R., Ameismeier, M., *et al. Science* **369(6508)**, 1249-1255 (2020).
9. Karousis, E.D. *Biochem. Soc. Trans.* **52(1)**, 481-490 (2024).
10. Schubert, K., Karousis, E.D., Jomaa, A., *et al. Nat. Struct. Mol. Biol.* **27(10)**, 959-966 (2020).
11. Mendez, A.S., Ly, M., González-Sánchez, A.M., *et al. Cell Rep.* **37(3)**, 109841 (2021).
12. Zhang, K., Miorin, L., Makio, T., *et al. Sci. Adv.* **7(6)**, eabe7386 (2021).

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