

PRODUCT DATASHEET

SARS-CoV-2 Spike Glycoprotein S1 HEK293

Cat. No.: RD975603100

Type: Recombinant protein

Size: 0.1 mg

Source: HEK293

Species: SARS-CoV-2

Description

Total 679 AA. MW: 76.2 kDa (calculated). UniProtKB acc. no. P0DTC2 (Ser13-Arg685). C-terminal His-tag (6 extra AA). Protein identity confirmed by LC-MS/MS.

Other names

Severe acute respiratory syndrome coronavirus 2 spike glycoprotein S1, 2019 novel coronavirus S1 protein, SARS-CoV-2 S1 subunit, COVID-19

Introduction to the molecule

Coronaviruses (CoVs), within the order Nidovirales, are enveloped, single-strand, positive-sense RNA viruses with a large genome of approximately 30 kbp in length. A human infecting coronavirus (viral pneumonia) initially known as 2019 novel coronavirus (2019-nCoV) was found in the fish market at the city of Wuhan, Hubei province of China in December 2019. The virus is now named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 shares an 87% identity to the 2 bat-derived severe acute respiratory syndrome 2018 SARS-CoV-2 located in Zhoushan of eastern China. SARS-CoV-2 has an analogous receptor-BD-structure to that of 2018 SARS-CoV, even though there is a.a. diversity so thus the SARS-CoV-2 might bind to ACE2 receptor protein (angiotensin-converting enzyme 2) in humans.

While bats are possibly the host of SARS-CoV-2, researchers suspect that animal from the ocean sold at the seafood market was an intermediate host. RSCU analysis proposes that the SARS-CoV-2 is a recombinant within the viral spike glycoprotein between the bat coronavirus and an unknown coronavirus.

Coronaviruses contain at least four structural proteins: Spike (S) protein, envelope (E) protein, membrane (M) protein, and nucleocapsid (N) protein.

The spike (S) glycoprotein is a type I transmembrane glycoprotein that plays an important role in mediating viral infection and is common to all HCoVs. The S proteins consist of two subunits, S1 and S2. The S1 subunit binds the cellular receptor through its receptor-binding domain (RBD), followed by conformational changes in the S2 subunit, which allows the fusion peptide to insert into the host target cell membrane. The heptad repeat 1 (HR1) region in the S2 subunit forms a homotrimeric assembly, which exposes three highly conserved hydrophobic grooves on the surface that bind heptad repeat 2 (HR2). This six-helix bundle (6-HB) core structure is formed during the fusion process and helps bring the viral and cellular membranes into close proximity for viral fusion and entry. Thus, the S protein is an important target protein for the development of specific drugs.

Research topic

COVID-19, Immune Response, Infection and Inflammation

Amino Acid sequence

SQCVNLTRRT QLPPAYTNSF TRGVYYPDKV FRSSVLHSTQ DLFLPFFSNV TWFHAIHVSG TNGTKRFDNP VLPFNDGVYF
ASTEKSNIIR GWIFGTTLDS KTQSLLIVNN ATNVVIKVCE FQFCNDPFLG VYHKNNKSW MESEFRVYSS ANNCTFEYVS
QPFLMDLEGK QGNFKNLREF VFKNIDGYFK IYSKHTPINL VRDLPQGFSA LEPLVDLPIG INITRFQTL ALHRSYLTPG
DSSSGWTAGA AAYYVGYLQP RTFLLKYEN GTITDAVDCA LDPLSETKCT LKSFTVEKGI YQTSNFRVQP TESIVRFPNI
TNLCPFGVEF NATRFASVYA WNRKRISNCV ADYSVLYNSA SFSTFKCYGV SPTKLNLCF TNVYADSFVI RGDEVRQIAP
GQTGKIADYN YKLPDDFTGC VIAWNSNLD SKVGGNYNYL YRLFRRKSNLK PFERDISTEI YQAGSTPCNG VEGFNCFPL
QSYGFQPTNG VGYQPYRVVV LSFELLHAPA TVCGPKKSTN LVKNKCVNFN FNGLTGTGVL TESNKKFLPF QFGRDIADT
TDAVRDPQTL EILDITPCSF GGVSVITPGT NTSNQAVLY QDVNCTEVPV AIHADQLTPT WRVYSTGSNV FQTRAGCLIG
AEHVNSYEC DIPIGAGICA SYQTQNSPR RARHHHHHH

Purity

Purity as determined by densitometric image analysis: > 96 %

Endotoxin

< 0.1 EU/μg

Formulation:

Filtered (0.4 μm) and lyophilized from 0.5 mg/ml solution in phosphate buffered saline, pH 7.5 and 5% (w/v) trehalose.

Reconstitution:

Add deionized water to prepare a working stock solution of approximately 0.5 mg/ml and let the lyophilized pellet dissolve completely.

Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life

Store the lyophilized protein at -80 °C. Lyophilized protein remains stable until the expiry date when stored at -80 °C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at -80 °C for long term storage. Reconstituted protein can be stored at 4 °C for three days.

Quality control

BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

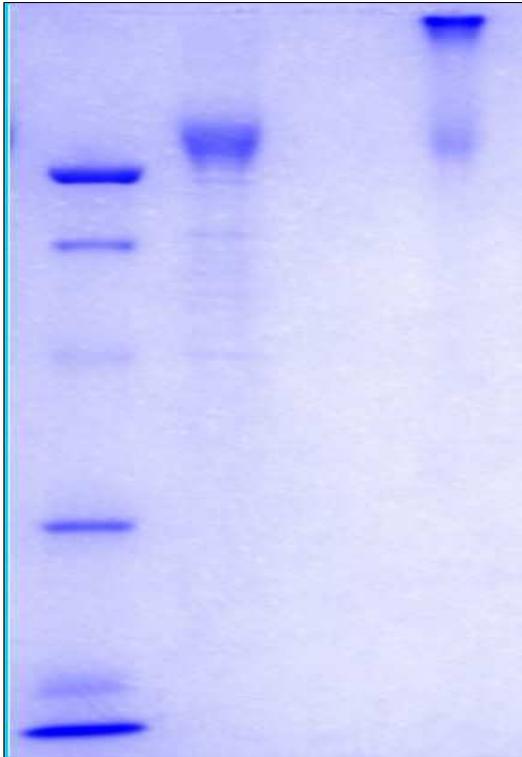
LAL to determine quantity of endotoxin.

Applications

COVID-19, ELISA, Western blotting

Note

This product is intended for research use only.



10 % SDS-PAGE separation of SARS-CoV-2 Spike Glycoprote S1:

1. M.W. marker – 14, 21, 31, 45, 66, 97 kDa
2. Reduced and boiled sample, 2.5 µg/lane
3. Non-reduced and non-boiled sample, 2.5 µg/lane