

PRODUCT DATASHEET

SARS-CoV-2 Spike Glycoprotein S1 RBD HEK293

Cat. No.: RD975599100

Type: Recombinant protein

Size: 0.1 mg

Source: HEK293

Species: SARS-CoV-2

Description

Total 228 AA. MW: 25.8 kDa (calculated). UniProtKB acc. no. P0DTC2 (Arg319–Asn540). 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

RVQPTESIVR FPNITNLCPF GEVFNATRFA SVYAWNKRRI SNCVADYSVL YNSASFSTFK CYGVSPKLN DLCFTNVYAD
SFVIRGDEV R QIAPGQTGKI ADYNYKL PDD FTGCVIAWNS NNLD SKVGGN YNYLYRLFRK SNLKPFRDI STEIYQAGST
PCNGVEGFNC YFPLQSYGFQ PTNGVGYQPY R VVLSFELL HAPATVCGPK KSTNLVKNKC VNHHHHHH

Purity

Purity as determined by densitometric image analysis: >95 %

Endotoxin

< 0.1 EU/μg

Formulation:

Filtered (0.4 μm) and lyophilized in phosphate buffered saline pH 7.5.

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 a week.

Quality control

BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

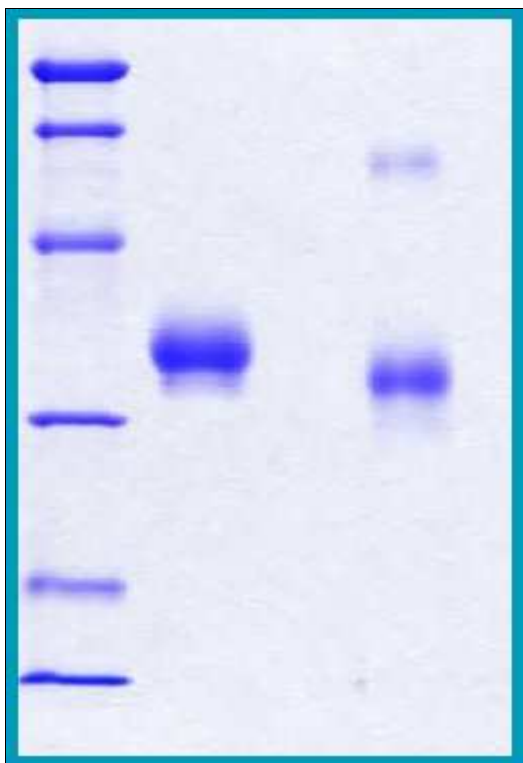
LAL to determine quantity of endotoxin.

Applications

COVID-19, ELISA, Western blotting

Note

This product is intended for research use only.



12% SDS-PAGE separation of S1RBD

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