BioVendor and Diagnostic Products

Date of issue: 20.07.2020

PRODUCT DATASHEET

SARS-CoV-2 Spike S1 protein (expressed in HEK293 cells)

Cat. No.: RI975603100 **Type:** Recombinant protein

Size: 0.1 ma Source: HEK293 Species: SARS-CoV-2

Description

The recombinant SARS-CoV-2 Spike S1 Protein (YP_009724390.1) (Val16-Arg685) with C-terminal His-tag consists of 681 amino acids. Its predicted molecular mass of 77 kDa. The apparent molecular mass of S1 in SDS-PAGE is around 120 kDa, probably due to glycosylation. The concentration of protein was determined by BCA.

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

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Purity

> 95% (SDS-PAGE)

Biological activity

Strong binding ability with human ACE2 protein and binding capacity to a human anti-S1 monoclonal antibody (determined by ELISA).

Endotoxin

<5 EU/mg, determined by the LAL method

Formulation:

Lyophilzed from PBS buffer pH 7.4

Reconstituion:

For reconstitution add 100 mL of deionized water, mix gently and incubate the reconstituted product for 10 minutes at room temperature prior to use.

Shipping

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

Storage, Stability/Shelf Life

Lyophilized protein can be stored at -20°C to -80°C. Reconstituted protein should be store at 4°C while using and for long term storage at -20°C to -80°C. Avoid repeated freeze - thaw cycles.

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.

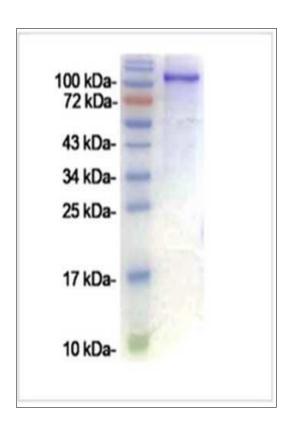
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