Spike-RBD-Fc

Soluble SARS-CoV-2 Spike RBD protein fused to a human IgG1 Fc tag

Catalog code: fc-sars2-rbd

https://www.invivogen.com/sars2-spike-proteins-fc

For research use only, not for diagnostic or therapeutic use

Version 21K17-NJ

PRODUCT INFORMATION

Contents:
- 50 µg of lyophilized Spike-RBD-Fc protein
- 1.5 ml endotoxin-free water

Protein construction:
RBD [R319-F541] from the Spike glycoprotein with a human IgG1 Fc tag in C-terminus

Accession sequence: YP_009724390 (native sequence)

Species: SARS-CoV-2 (2019-nCoV); Wuhan-Hu-1 (D614) isolate

Tag: C-terminal human IgG1 Fc

Total protein size: 473 a.a. (secreted form)

Molecular weight: ~59 kDa

Purification: protein G affinity chromatography

Purity: >95% (SDS-PAGE)

Formulation:
0.2 µm filtered solution in a sodium phosphate buffer with glycine, saccharose, and stabilizing agents

Storage:
- Product is shipped at room temperature. Store lyophilized product at -20 °C. Lyophilized product is stable for at least 1 year.
- Reconstituted protein is stable for 1 month when stored at 4°C and for 1 year when aliquoted and stored at -20 °C. Avoid repeated freeze-thaw cycles.

Quality control:
- The size and purity of the protein has been confirmed by SDS-PAGE.
- Spike-RBD-Fc has been functionally validated by ELISA using the Anti-SARS-CoV-Spike human IgM (clone CR3022).
- Absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and TLR4 cellular assays.

BACKGROUND

The SARS-CoV-2 Spike RBD (receptor binding domain) has been identified as the key viral element allowing the virus to dock to the target cells. RDB is recognized by ACE2 (angiotensin I-converting enzyme-2)[1-3], a surface membrane receptor expressed in arteries, heart, kidneys, and epithelia of the lung and small intestine. RBD is a candidate for subunit prophylactic vaccines against SARS-CoVs[4-5]. RBD is also at the center of therapeutic approaches to treat the coronavirus virus disease-19 (COVID-19), such as the development and testing of small peptide inhibitors or soluble ACE2 to block the SARS-CoV-2 entry into target cells[6].

PRODUCT DESCRIPTION

Spike-RBD-Fc is a soluble SARS-CoV-2 fusion protein generated by fusing the Spike Receptor Binding Domain (RBD; a.a. 319-541) to a C-terminal human IgG1 Fc tag with a TEV (Tobacco Etch Virus) sequence linker. This fusion protein has a molecular weight of ~59 kDa on a SDS PAGE gel. Spike-RBD-Fc has been generated by recombinant DNA technology, produced in CHO cells, and purified by protein G affinity chromatography.

APPLICATIONS

- **Vaccination studies:** using combinations of Spike protein antigens and adjuvants.
- **Antibody screening:** finding anti-Spike antibodies that can neutralize the SARS-CoV-2 infection.
- **Inhibitor screening:** finding small molecules, or antibodies able to block the SARS-CoV-2 RBD interaction with the ACE2 receptor.
- **ACE2 cellular expression screening:** in primary isolated cells or transfected cells.

METHODS

Spike-RBD-Fc resuspension (100 µg/ml)

Note: Ensure you see the lyophilized pellet before resuspension.
- Add 500 µl of endotoxin-free water to the vial and gently pipette until completely resuspended.
- Prepare aliquots and store at -20 °C or 4°C.

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PROTEIN SEQUENCE

M E I K V L F A L I C I A V A E A K P T E L E R V Q P T E S I V R F P N
I T N L C P F G E V F N A T R F A S V Y A W N R K R I S N C V A D Y
S V L Y N S A S F S T F K C Y G V S P T K L N D L C F T N V Y A D S F
V I R G D E V R Q I A P G Q T G K I A D Y N Y K L P D D F T G C V I
A W N S N N L D S K V G G N Y N Y L Y R L F R K S N L K P F E R D I
S T E I Y Q A G S T P C N G V E G F N C Y F P L Q S Y G F Q P T N G
V G Y Q P Y R V V V L S F E L L H A P A T V C G P K K S T N L V K N
K C V N F R T E N L Y F Q G S G S E P K S S D K T H T C P P C P A P
E A E G G P S V F L F P P K P K D Q L M I S R T P E V T C V V V D V
S H E D P E V K F N W Y V D G V E V H N A K T K P R E E Q Y N S T
Y R V V S V L T V L H Q D W L N G K E Y K C K V S N K A L P A S I E
K T I S K A K G Q P R E P Q V Y T L P P S R E E M T K N Q V S L T C
L V K G F Y P S D I A V E W E S N G Q P E N N Y K T T P P V L D S D
G S F F L Y S K L T V D K S R W Q Q G N V F S C S V L H E A L H N H
Y T Q K S L S L S P G K

Green: signal sequence
Purple: stabilizing amino acid sequence
Blue: RBD sequence
Black: TEV cleavage sequence
Red: Human IgG1 Fc sequence

REFERENCES

1. Li F., 2016. Structure, function, and evolution of coronavirus spike proteins. Annu. Rev. Virol. 3:237-261. **2. Li F. *et al.*, 2005.** Structure of SARS coronavirus spike receptor-binding domain complexed with receptor. Science. 309:1864-1868. **3. Walls A.C. *et al.*, 2020.** Structure, function, and antigenicity of the SARS-CoV-2 spike glycoprotein. Cell. 181(2):281-292.e6. **4. Wang N. *et al.*, 2020.** Subunit vaccines against emerging pathogenic human coronaviruses. Front. Microbiol. 11:298. DOI: 10.3389/fmicb.2020.00298. **5. Padron-Regalado E., 2020.** Vaccines for SARS-CoV-2: Lessons from other coronavirus strains. Infect. Dis. Ther. DOI: 10.1007/s40121-020-00300-x. **6. Monteil V. *et al.*, 2020.** Inhibition of SARS-CoV-2 infections in engineered human tissues using clinical-grade soluble human ACE2. Cell. 181:1-9.

RELATED PRODUCTS

Product	Catalog Code
Anti-Spike-RBD-hIgG1	srbd-mab1
Anti-Spike-RBD-hIgM	srbd-mab5
Anti-Spike-RBD-hIgA2	srbd-mab6
hACE2-Fc	fc-hace2
Spike-RBD-His	his-sars2-srbd
Spike-S1-Fc	fc-sars2-s1
Spike-S1-His	his-sars2-s1
pDUO2-hACE2-TMPRSS2a	pduo2-hace2tpsa

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