

Spike-RBD-His

Soluble SARS-CoV-2 Spike RBD protein fused to a poly-histidine tag

Catalog code: his-sars2-rbd

<https://www.invivogen.com/sars2-spike-proteins>

For research use only, not for diagnostic or therapeutic use

Version 20123-NJ

PRODUCT INFORMATION

Contents:

- 50 µg of lyophilized Spike-RBD-His protein
- 1.5 ml endotoxin-free water

Protein construction:

RBD [R319-F541] from the Spike glycoprotein with a poly-histidine tag in C-terminus

Accession sequence: YP_009724390 (native sequence)

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

Tag: C-terminal poly-histidine (6 x His)

Total protein size: 234 a.a. (secreted form)

Molecular weight: ~30 kDa

Purification: Ni²⁺ 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-His 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. RBD 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-CoVs⁴⁻⁵. 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 cells⁶.

PRODUCT DESCRIPTION

Spike-RBD-His 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 poly-histidine (6 x Histidine) tag with a 3 amino acid linker. This fusion protein has a molecular weight of ~30 kDa on a SDS-PAGE gel. Spike-RBD-His has been generated by recombinant DNA technology, produced in CHO cells, and purified by Ni²⁺ 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-His 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.

TECHNICAL SUPPORT

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PROTEIN SEQUENCE

MEIKVLFALICIAVAEALERVQPTESIVRFPNITNL
CPFGEVFNATRFASVYAWNRRKRISNCVADYSVLY
NSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRG
DEVQRQIAPGQQTGKIADYNYKLPDDFTGCVIAWNS
NNLDSKVGGNYNLYRLFRKSNLKPFERDISTEY
QAGSTPCNGVEGFNCYFPLQSYGFQPTNGVGYQ
PYRVVVLSELLHAPATVCGPKKSTNLVKNKCVN
FGSGHHHHH

Green: signal sequence

Purple: stabilizing amino acid sequence

Blue: RBD sequence

Black: tri-amino acid short linker

Red: 6 x Histidine

RELATED PRODUCTS

Product	Catalog Code
Anti-Spike-RBD-hlgG1	srbd-mab1
Anti-Spike-RBD-hlgM	srbd-mab5
Anti-Spike-RBD-hlgA2	srbd-mab6
hACE2-Fc	fc-hace2
Spike-RBD-Fc	Fc-sars2-srbd
Spike-S1-Fc	fc-sars2-s1
Spike-S1-His	his-sars2-s1
pDUO2-hACE2-TMPRSS2a	pduo2-hace2tpsa

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.

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