User Guide

Anti-SARS-COV-2-Spike-RBD Region Peroxidase Conjugated Antibody Produced in Rabbit

Affinity isolated antibody

SAB4200889

Product Description

Anti-SARS-CoV-2-Spike-RBD region antibody is developed in rabbit using synthetic peptide corresponding to the C-terminal region of Spike RBD region (GeneID: QHD43416.1), conjugated to KLH as immunogen. The antibody is affinity-purified using the immunizing peptide immobilized on agarose and is conjugated to horseradish peroxidase.

Anti-SARS-CoV-2-Spike-RBD region antibody specifically recognizes Spike from COVID-19 virus origin. The antibody may be used in various immunochemical techniques including Immunoblotting and ELISA. Detection of the Spike RBD protein band by Immunoblotting is specifically inhibited by the immunogen.

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) or (2019-nCoV) is a novel coronavirus that had spread on December 2019 in Hubei province of China and infected millions of people worldwide.[1] The causative agent of COVID-19, the SARS-CoV-2 virus is a positive-strand RNA virus. The mature SARS-CoV-2 contains 4 structural proteins: Envelope (E), Membrane (M), Nucleocapsid (N), and the Spike protein (S), E and M proteins help in viral assembly and N protein is needed for RNA synthesis.

The main receptor for SARS-CoV and SARS-CoV-2 on the membrane of the target cells is the Angiotensin 2 Converting Enzyme (ACE2). ACE2 is a metallopeptidase present on the membrane of many cells, including type-I and -II pneumocytes, small intestine enterocytes, kidney proximal tubules cells, the endothelial cells of arteries and veins, and the arterial smooth muscle, among other tissues.[15-16] It has been shown that SARS-CoV-2 virus employs transmembrane protease serine 2 (TMPRSS2) for S protein priming and it is speculated that furin-mediated cleavage at the S1/S2 site in infected cells, may promote subsequent TMPRSS2-dependent entry into target cells.

The Spike protein (S) is responsible for virus binding and entry into the host cells. SARS-CoV-2 S protein precursor is cleaved into S1 subunit (685 amino acids), and S2 (588 amino acids) subunits. S1 subunit harbor the receptor binding domain (RBD) that mediates virus entry into susceptible cells through the peptidase domain of host ACE2 with high affinity (Kd = 15 nM). S2 protein, which is reported to be well-conserved and showing 99% identity with bat coronavirus, is responsible for the membrane fusion. The Spike protein is the most studied between the coronaviruses proteins, due to its crucial role in the host cell entry, it contains the RBD for the ligand on the host cell membrane (the ACE2 protein), and also has epitopes recognized by T and B cells, which induce the production of neutralizing antibodies.[2]

Anti-SARS-CoV-2-Spike protein antibodies are important tools in the COVID-19 research field and can be used for detection of Spike protein in different samples and in cell culture assays.[17]

Reagent

Supplied as a lyophilized powder.

Preparation Instructions

Reconstitute the content of the vial with 0.1 mL of distilled water to a final antibody concentration of ~3 mg/mL. After reconstitution, the solution contains 2.5% trehalose, 0.05% MIT in 0.01 M sodium phosphate buffered saline.

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the lyophilized product at 2–8 °C. For extended storage after reconstitution, keep at –20 °C in working aliquots. Avoid repeated freeze-thaw cycles. For continuous use after reconstitution, keep at 2–8 °C for up to 1 month. Solutions at working dilution should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a minimum working dilution of 1/2000-1/4000 detects of SARS-CoV-2 RBD recombinant protein (Cat. No. SAE1000) in lysate.

Direct ELISA: a minimal working dilution 1/4000-1/8000 is recommended using 2 µg/mL SARS-CoV-2 RBD recombinant protein (Cat. No. SAE1000) for coating.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

1. García, Luis F., Frontiers in immunology, 11: 1441 (2020).
2. Walls AC, et al., Cell. 181:281–92.e6 (2020).
3. Shang J., et al., Nature. 581:221–4 (2020).
4. Tai W., et al. Cell Mol Immunol. 17:621–30 (2020).
5. Chen Y., et al., Biochem Biophys Res Commun. 525:135–40 (2020).
6. Hoffmann M., et al. Cell. 181:270–81.e8 (2020).
7. Lan J., et al. Nature. 581:215–20 (2020).
8. Liu Z., et al. J Med Virol. 92:595–601 (2020).
9. Luan J., et al., Biochem Biophys Res Commun. 526:165–9 (2020).
10. Yan R., et al., Science. 367:1444 (2020).
11. Fung T.S., et al., Annu Rev Microbiol. 73:529–57 (2019).
12. Wrapp D., et al., Science. 367:1260 (2020).
13. Ou X., et al., Nat Commun. 11:1620 (2020).
14. Shang J., et al., PLoS Pathog. 16:e1008392 (2020).
15. Hamming I., et al., J Pathol. 203:631–7 (2004).
16. Zou X., et al., Front Med. 14:185–92 (2020).
17. Abe K.T., et al. JCI insight 5.19 (2020).

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

Technical Assistance

Visit the tech service page at SigmaAldrich.com/techservice.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at SigmaAldrich.com/terms.

Contact Information

For the location of the office nearest you, go to SigmaAldrich.com/offices.