Product Information

SARS-CoV-2 Receptor Binding Domain

Biotin-tagged, Spike protein RBD recombinant, expressed in HEK 293 cells

SAE0199

Product Description

SARS-CoV-2 belongs to Coronaviridae (CoVs), a large family of viruses that usually cause mild to moderate upper-respiratory tract diseases.[1] CoVs are single-stranded RNA viruses. CoVs have a high mutation rate and are therefore highly diverse.[1] Their hosts include human and non-human mammals, as well as birds.[1]

SARS-CoV-2 infects cells which express angiotensin converting enzyme 2 (ACE2).[2] ACE2 binds to the viral envelope-associated spike (S) protein as a cellular receptor, following proteolytic cleavage of both S and ACE2 by serine proteases.[3] S protein is believed to be the target of neutralizing antibodies, because it is the main trans-membrane glycoprotein responsible for receptor-binding and virion entry.[4]

The S protein is a trimeric protein. During the binding to ACE2, S protein undergoes a substantial structural rearrangement to facilitate the fusion of the viral membrane with the host cell membrane.[5] The receptor binding domain (RBD) of S protein is the domain that specifically binds to ACE2. RBD is the major target for neutralizing antibodies for coronaviruses,[6] and anti-RBD antibodies likely correlate with virus neutralization.[7]

This product is expressed in human HEK 293 cells as a glycoprotein with a calculated molecular mass of 25 kDa (amino acids 319-541) and includes a C-terminal polyhistidine tag. The DTT-reduced protein migrates as a ~35 kDa polypeptide on SDS-PAGE because of glycosylation. This protein is produced in human cells, without the use of serum. The human cells expression system allows human like glycosylation and folding, and often supports higher specific binding of the protein.

This Spike protein RBD product is labeled with biotin. It may serve as a useful tool for binding experiments and protein:protein interaction assays using binding partners such as ACE2. The degree of biotinylation is ≥90%. This Spike protein RBD-biotin can be visualized with a streptavidin-conjugated probe, like a Streptavidin-HRP conjugate (such as Cat. Nos. S5512, 18-152, or E2886).

Product

This product is supplied as a lyophilized powder in phosphate buffered saline (PBS), pH 7.4, with no carrier proteins. It is aseptically filled.

The activity of this product is tested by a functional ELISA. Immobilization of ACE2 (Cat. No. SAE0064) at 2 µg/mL (100 µL/well) allows binding of Spike protein RBD, biotin-tagged. The half-maximal binding (binding which produces 50% of the optimal binding response) is ≤ 2 µg/mL.

Purity: ≥95% (SDS-PAGE)

Precautions and Disclaimer

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 product at –20 °C. The product retains its activity for at least 2 years as supplied.

Preparation Instructions

This product may be reconstituted in ultrapure water or molecular biology grade water. It is recommended to store the reconstituted protein solution in working aliquots at –20 °C.

References

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6. Berry, J.D. *et al.*, *MAbs*, **2(1)**, 53-66 (2010).
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