Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)

Miltenyi Biotec

Contents

1. Description
   - 1.1 Background information
   - 1.2 Applications

1. Description

Products Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK) or Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin.

Productname	Content	Order no.
Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)	25 µg	130-128-478
Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)	100 µg	130-128-477
Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin	10 µg	130-128-481
Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin	50 µg	130-128-479

Functional testing Functionality was tested in a flow assay by analyzing the binding of Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin to ACE2-expressing cells.

Primary structure Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK): Single glycosylated polypeptide chain (301 amino acid residues) without N-terminal methionine. C-terminal His-tag and N-terminal AviTag™.

Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin:
Monobiotinylated, glycosylated polypeptide chain (301 amino acid residues) without N-terminal methionine. C-terminal His-tag and N-terminal AviTag.

Molecular mass 33.8 kDa.

Source Produced in human embryonic kidney cells.

Product format Lyophilized from a filtered (0.2 µm) buffer solution.

Stabilizer Mannitol and trehalose.

Purity >95% as determined by SDS-PAGE analysis.

Endotoxin level Low endotoxin (<0.1 EU/µg protein) as determined by Limulus Amebocyte Lysate (LAL) assay.

Storage Lyophilized Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK) should be stored at –20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at –20 °C or below. Avoid repeated freeze-thaw cycles.

Reconstitution It is recommended to reconstitute lyophilized Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK) with deionized, sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL.

1.1 Background information

The receptor binding domain (RBD) locates C-terminally within the S1 subunits of the spike glycoprotein (S) . The S protein forms a homotrimeric structure on the surface of the SARS-CoV-2 virus and binds to the angiotensin-converting enzyme 2 (ACE2) receptor of target cells. Recent studies have shown that the predominant activated form displays one RBD rotated upwards into an ACE2-accessible state and it is known that binding of RBD to ACE2 is a major contributor for interaction of the S protein with its target receptor. The SARS-CoV-2 mutant strain B.1.1.7, also known as variant of concern (VOC-202012/01), was first detected in September 2020 during the Covid-19 pandemic and rapidly spread globally, partly owing to the increased transmissibility compared to the wild type. B.1.1.7 differs from the wild type sequence by 23 amino acid mutations: 14 non-synonymous mutations, 3 deletions and 6 synonymous mutations. One of these mutations leads to an amino acid substitution (N501Y) in the RBD of B.1.1.7, which mainly contributes to the increased infectivity of B.1.1.7 as mutations in the RBD affect antibody recognition and ACE2 binding efficiency. The N501Y mutation also emerged independently in SARS-CoV-2 variants in South Africa (B.1.351) and Brazil (P.1 linage).
The SARS-CoV-2 RBD B.1.1.7 (HEK) protein covers amino acids R319 to S591 of the spike protein, contains the N501Y mutation, as well as a C-terminal His-tag and an N-terminal AviTag. Recombinant SARS-CoV-2 RBD B.1.1.7 (HEK)-Biotin is specifically biotinylated at a single site, preserving full functionality of the RBD.

1.2 Applications

The product can be used for a variety of applications, including:

- Analysis of SARS-CoV-2 immune responses
- Detection and characterization of SARS-CoV-2-specific antibodies
- Studying SARS-CoV-2 cell binding, infection, and viral life cycle

The optimal concentration for a specific application should be determined by a dose-response experiment.

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