

Recombinant SARS-CoV-2 Spike Glycoproteins (S1), sFc-tagged

Cat. No. HUM-381 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

This SARS-CoV-2 Spike Duo Pack contains recombinant subunit 1 (S1) proteins manufactured in both human embryonic kidney (HEK293) cells and Chinese Hamster Ovary (CHO) cells for comparative analysis of expression host-cell differences, such as post-translational modifications (PTMs). One of the most common forms of PTM is glycosylation, which is important for many viruses as part of their armoury to overcome the inhibitory effects of neutralizing antibodies and antiviral agents. This pack give researchers the tools to optimize their assay development (or other applications) for maximum specificity and sensitivity. SARS-CoV-2, previously known as the 2019 Novel Coronavirus (2019-nCoV), causes the pandemic COVID-19 disease.

Tag

sheep Fc

Background

Glycosylation plays an important role in the pharmacokinetics and immunogenicity of recombinant proteins and their glycosylation is significantly dependent on the host-cell type (Goh & Ng, 2018). Glycosylation profiles of 12 different proteins produced in CHO-S and HEK293-EBNA1 cells were compared and showed to differ in molecular weight, isoelectric point (pI), glycoprotein structure and mass peak profile. Glycan analysis of the same proteins showed that those expressed in HEK293 cells had more complex glycosylation profiles compared to CHO-derived proteins. In contrast, CHO-derived proteins were more sialylated compared to HEK293-derived proteins (Croset et al., 2012; Uchida et al., 1979). Cell cultivation and analytical methods may also contribute to observed differences in glycosylation structures (Bardor et al.,

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2005; Ni et al., 2012; Nishikaze, 2017).

SARS-CoV-2 is a respiratory virus which causes coronavirus disease 2019 (COVID-19). The coronavirus spike (S) glycoprotein is a class I viral fusion protein on the outer envelope of the virion that plays a critical role in viral infection by recognizing host cell receptors and mediating fusion of the viral and cellular membranes (Li, 2016). The S protein is glycosylated by the host cellular glycosylation apparatus as it passes through the secretory pathway. The resulting glycans give the virus a number of benefits. The mannose residues within these glycans are important moieties which interact with cell surface attachment factors, like glycosaminoglycans (GAGs) and sialic acid-containing oligosaccharides, before binding to the ACE2 receptor. Extensive glycosylation has been reported at the interface of the Spike:ACE2 complex, further highlighting roles for glycans in modulating this interaction. Viral glycoproteins are the main targets of host antibodies, as these molecules are prominently displayed on the virion surfaces. Addition of glycans sterically mask the underlying polypeptide epitopes from recognition of potentially neutralizing antibodies, forming a 'glycan shield'. These "self"-glycans are believed to be a strategy to escape the host immune response. Therefore, understanding the glycosylation of S protein has important implications in viral pathobiology and vaccine design (Zhao et al., 2021).

Formulation	Dulbecco's phosphate buffered saline (DPBS) pH 7.4.
Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
Type	Recombinant
ClassID 1	Infectious Disease

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GENE INFORMATION

Synonyms	SARS-CoV-2 Spike Glycoproteins (S1)
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