Recombinant SARS-CoV-2 ORF7a Fc Chimera

Catalog Number: 10668-CV

DESCRIPTION

Source

Chinese Hamster Ovary cell line, CHO-derived sars-cov-2 ORF7a protein

SARS-CoV-2 ORF7a (Glu16-Leu96) Accession # YP_009724395.1	IEGRMD	Human IgG_1 (Pro100-Lys330)

N-terminus C-terminus

N-terminal Sequence Analysis	Glu16
Predicted Molecular Mass	36 kDa

SPECIFICATIONS

SDS-PAGE	37-42 kDa, under reducing conditions.
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Supplied as a 0.2 µm filtered solution in Tris, NaCl, TCEP and Glycerol. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 6 months from date of receipt, -20 to -70 °C as supplied. • 3 months, -20 to -70 °C under sterile conditions after opening.

BACKGROUND

Open Reading Frame 7a (ORF7a) is one of eight accessory proteins encoded at the 3' region of the coronavirus (CoV) genome (1). The accessory proteins are largely dispensable for viral replication and growth in vitro (2,3). Although not essential for replication the accessory proteins are thought to modulate virus-host interactions that are important during infection (4). Coronaviruses include various highly pathogenic strains such as SARS-CoV, MERS-CoV and SARS-CoV2 that have had significant impact on humans as well as strains that have negatively impacted livestock. ORF7a from SARS-CoV2 is a small 121 amino acid (aa) type I transmembrane protein (5,6). ORF7a contains an N-terminal signal peptide, a luminal domain, transmembrane domain, and a short C-terminal cytoplasmic tail that functions as an ER export signal (5,7). It is expressed and retained intracellularly in cells infected with SARS-CoV and primarily localized to the Golgi (5,7) Although the function of the accessory proteins has not been well-defined, ORF7a has been shown to activate p38 MAPK(7), NF-kB, and JNK signaling pathways, enhance production of inflammatory chemokines known to be upregulated in SARS-CoV infection (8), and inhibit cellular protein synthesis (9). These reports indicate ORF7a may be involved in the inflammatory response and induction of apoptosis of SARS-CoV infected cells (7-10). ORF7a has also been reported to bind and prevent glycosylation of host cell protein bone marrow stromal antigen 2 (BST-2). Binding inhibits BST-2's ability to block the release of SARS-CoV virions (11). Therapeutics designed to inhibit the interaction of the ectodomain of ORF7a and BST2 have been proposed as a method to inhibit virus growth (11).

References:

1. Hartenian, E. *et al.* (2020) J. Biol. Chem. **295**:12910.
2. Haijema, B.J. *et al.* (2004) J. Virol. **78**:3863.
3. Yount, B. *et al.* (2005) J. Virol. **79**:14909.
4. Liu, D.X. *et al.* (2014) Antiviral Res. **109**:97.
5. Nelson, C.A. *et al.* (2005) Structure **13**:75.
6. Yoshimoto, F.K. *et al.* (2020) Protein J. **39**:198.
7. Schaecher, S.R. *et al.* (2007) J. Virol. **81**:11054.
8. Kanzawa, N. *et al.* (2006) FEBS Lett. **580**:6807.
9. Kopecky-Bromberg, S.A. *et al.* (2006) J. Virol. **80**:785.
10. Tan, Y. *et al.* (2004) J. Virol. **78**:14043.
11. Taylor, J.K. *et al.* (2015) J. Virol. **89**:11820.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449