Recombinant Human ACE2 Protein, Fc-tagged

Cat. No. HUM-290 **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant human angiotensin-converting enzyme 2 (ACE2) extracellular domain (18-615) was expressed in CHO cells using a C-terminal Fc-tag and binds to the SARS Coronavirus 2 (COVID-19) receptor binding domain (RBD).
Source	CHO
Tag	Fc
Background	Angiotensin converting enzyme 2 (ACE2) or ACE homologue (ACEH) was discovered as a zinc metalloproteinase by two different groups in 2000 (Patel et al., 2016). ACE2 is an enzyme attached to the cell membranes in lungs, arteries, heart, kidney, and intestines. It is a type I transmembrane protein with an extracellular N-terminal domain containing the catalytic site and an intracellular C-terminal tail. The protein contains a signal peptide, a transmembrane domain, and a single metalloproteinase active site containing an HEXXH zinc-binding domain. The extracellular domain of ACE2 is cleaved from the transmembrane domain by an enzyme known as sheddase, and the resulting soluble protein is released into the blood stream and ultimately excreted into urine. ACE2 acts as a mono-carboxypeptidase (removing a single amino acid) that degrades Ang I to generate the nonapeptide Ang 1–9 and Ang II to generate the heptapeptide Ang 1–7. Expression of a soluble truncated form of ACE2 in CHO cells produced a glycoprotein of 120 kDa that was able to cleave Ang I and II but not bradykinin and ACE2 catalytic efficiency is 400-fold higher with Ang II as a substrate than with Ang I. It has been reported that human ACE2 is also the entry receptor of SARS

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	coronaviruses (Li et al., 2003), including SARS-CoV-2, and that a serine protease is important for SARS-CoV-2 Spike activation (Hoffmann et al., 2020). 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). Two major domains in coronavirus S1 have been identified, the N-terminal domain (S1-NTD) and C-terminal domain (S1-CTD). Either or both of these S1 domains can function as a receptor-binding domain (RBD), depending on virus; SARS-CoV and MERS-CoV both use C-domain to bind their receptors (Ou et al., 2020). While S proteins of SARS-CoV-2 share about 76% amino acid identities with SARS-CoV, the amino acid sequence of potential RBD of SARS-CoV-2 is only about 74% homologous to that of SARS-CoV. It has been hypothesized that decreasing the levels of ACE2 in cells may give some protective effects against infection. ACE2 has been shown to have a protective effect against virus-induced lung injury by increasing the production of the vasodilator angiotensin 1–7 (Imai et al., 2008).
Purity	Greater than 95% purity
Formulation	50mM Tris-HCl, pH7.5, 90mM glycine.
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

GENE INFORMATION

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Synonyms	ACE2

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