



Recombinant Human Soluble ACE2-Fc Chimera

20210715BB



FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	SFC-002S
Size:	5 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	ACE2
Synonyms:	Angiotensin-converting enzyme homolog 1, ACEH1, Angiotensin-converting enzyme-related carboxypeptidase 1, ACE-related carboxypeptidase, Metalloprotease MPROT151

Angiotensin I Converting Enzyme (ACE2) is a dimeric, zinc-dependent metalloprotease of the ACE family. ACE2 has been established as the functional host receptor for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). ACE2 is abundantly expressed in a variety of cells residing in many different human organs. In human physiology, ACE2 is a pivotal counter-regulatory enzyme to ACE by the breakdown of angiotensin II, the central player in the renin-angiotensin-aldosterone system (RAAS) and the main substrate of ACE2. Full length ACE2 protein includes an extracellular region composed of a single N-terminal peptidase domain and C-terminal collectrin-like domain (CLD), a transmembrane domain, and a short cytoplasmic tail. The N-terminal peptidase region is required for binding to SARS-CoV and SARS-CoV2 spike proteins, while the CLD contains a region that promotes dimerization and association with amino acid transporters. The peptidase domain contains a long deep cleft that undergoes a large hinge-bending movement at substrate and inhibitor binding. Classical ACE inhibitors such as captopril and lisinopril do not inhibit ACE2 activity and inhibitors of ACE2 do not inhibit ACE activity. The recombinant sACE2 consists of the extracellular domain from Gln18 to Asn639 and was fused at the C terminus to the human Fc-tag.

References

- Verdecchia P et al, Eur J Int Medicine 76 (2020) 14–20
- Li Y et al, Pharmacological Research 157 (2020) 104833
- Bourgonje AR et al, Journal of Pathology, doi:10.1002/path.5471
- Mahmoud Gheblawi et al, Circ. Research 2020;126:1457–1475
- Perotta F et al, Respiratory Medicine 168 (2020) 105996
- Datta PK et al, Theranostics 2020, Vol. 10, Issue 16, 7448
- Malhotra A et al, DOI: <https://doi.org/10.1016/j.isci.2020.101425>

Sequence

QSTIEEQAKTFLDKFNHEAEDLFYQSSSLASWNYNTNITEENVQNMNAGDKWSAFLKEQ
STLAQMYPLQEIQLNTVKLQALQNGSSVLSSEKSKRLNTILNTMSTIYSTGKVCNP
DNPQECLELLEPGLNEIMANSLDYNERLWAWESWRSEVQKQLRPLYEYVVLKNEMARAN
HYEDYGDYWRGDYEVNGVDGYDYSRGQLIEDVEHTFEEIKPLYEHLHAYVRAKLMNAYP
SYISPIGCLPAHLLGDMWGRFNTNLYSLTVPFQKPNIDVTAMVDQAWDAQRIKFKEAE
KFFVSVGLPNMTQGFWENSMLTDPGNVQKAVCHPTAWDLGKGFRI LMCTKVTMDDFLT
AHHEMGHIQYDMAYAAQPFLLRNGANEGFHEAVGEIMLSAATPKHLKSI GLLSPDFQE
DNETEINFLKQALTIVGTLPTMYLLEKWRWVFKGEIPKDQWMMKWKREIVGVVE
VPHDETYCDPASLFHVSNDYSFIRYTRTYLQFQFQEAALCQAAKHEGLHKCDISNST
EAGQKLFNMLRLGKSEPWTLALENVGAKNMNVRPLNLYFEPLFTWLKQNKNSFVGWS
TDWSPYADQS IKVRI SLKSALGDKAYEWNDRSDKTHTCPPCPAPELLGGPSVFLFPP
KPKDTLMI SRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVS
VLTVLHQDWLNGKEYKCKVSNKALPAPIEKTI SKAKGQPREPQVYVLTLP SREEMTKNQV
SLTCLVKGFPYPSDIAVEWESNGQPENNYKTTTPMLDSGDSFFLYSKLTVDKSRWQQGNV
FSCSVMEALHNHYTQKSLSLSPGK

Database References

Protein RefSeq:	NP_068576.1
Uniprot ID:	Q9BYF1
mRNA RefSeq:	NM_021804.2

Product Specifications

Expressed in	Insect cells
Purity	> 98% by SDS-PAGE & Coomassie stain
Buffer	PBS
Stabilizer	None
Formulation	lyophilized
Length (aa):	851
MW:	~100-110 kDa

Stability: Lyophilized samples are stable for greater than one year at –20°C to –70°C. Reconstituted sACE2-Fc is stable for about 4 weeks at 4°C but should be stored in working aliquots at -20°C for extended storage.

Reconstitution: Centrifuge the vial prior to opening. The lyophilized human sACE2-Fc is soluble in water and most aqueous buffers; it should be reconstituted in water or PBS to a concentration of not lower than 100µg/ml.



AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: Measured by its binding ability in a functional ELISA. Soluble ACE2-Fc binds to the SARS-CoV2 Spike1 protein.



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Handling/Application

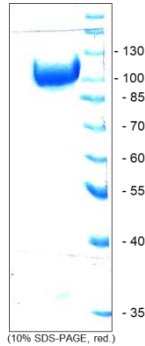


Fig. 1: SDS-PAGE analysis of recombinant human soluble ACE2-Fc. Sample was loaded in 10% SDS-polyacrylamide gel under reducing conditions and stained with Coomassie blue.

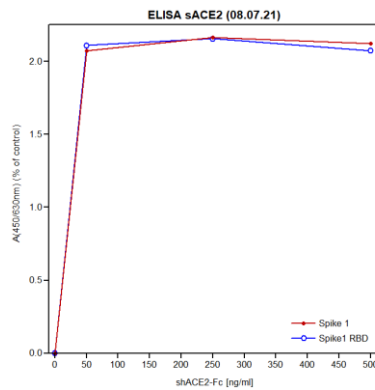


Fig. 2: Binding of sACE2-Fc to recombinant SARS-CoV2 Spike1 proteins in a functional ELISA. Recombinant SARS-CoV2 Spike1 and Spike1 RBD fragments were coated with 2µg/ml in PBS. The sACE2-Fc was added in increasing concentrations.

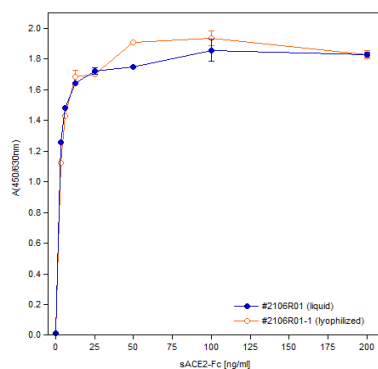


Fig. 3: Binding of sACE2-Fc to recombinant SARS-CoV2 Spike1 protein in a functional ELISA. Recombinant SARS-CoV2 Spike1 fragment was coated with 2µg/ml in PBS. The sACE2-Fc was added in increasing concentrations.