Product Information

Angiotensin Converting Enzyme-2

ACE2, Biotin-Tagged Human Recombinant, Expressed in HEK 293 Cells

SAE0171

Storage Temperature −20 °C

E.C. 3.4.17.23

Synonyms: ACE-2, ACE related carboxypeptidase,

Angiotensin-converting enzyme homolog (ACEH), Metalloprotease MPROT15

Product Description

Angiotensin Converting Enzyme-2 (ACE2) is a membrane-associated and secreted enzyme that is principally expressed on endothelium. In humans, ACE2 occurs mainly in endothelium of heart, kidney, and testis, with other expression in coronary vessel smooth muscle and kidney tubular epithelium.[1] ACE2 is a component of the renin-angiotensin system (RAS) that provides protective effects in peripheral tissues.[2]

Coronaviruses such as SARS-CoV-2 and SARS-CoV-1 use the host ACE2 as a co-receptor to gain intracellular entry into the lungs and brain.[3,4] The virion expresses a protein termed spike, which directly binds to the extracellular domain of ACE2. A specific region in the spike protein serves as the receptor binding domain (RBD). The ACE2:spike interaction has a high affinity of 15 nM.[5]

Recombinant human ACE2 is expressed in human HEK 293 cells as a glycoprotein with a C-terminal FLAG® tag and a C-terminal 6-histidine-tag, with a calculated molecular mass of 85.9 kDa. The DTT-reduced protein migrates as a 90–120 kDa polypeptide on SDS-PAGE because of glycosylation.

This ACE2 is labeled with biotin, and may serve as a useful tool for binding experiments and protein:protein interaction assays using binding partners such as CoV spike protein. The degree of biotinylation is ≥ 90%. This ACE2-biotin can be visualized with streptavidin-conjugated probes (for example, Streptavidin, HRP conjugate, Cat. Nos. 18-152, S5512).

This product is supplied as a powder, lyophilized from a 0.22 µm filtered solution in PBS, pH 7.4. The specific activity of recombinant ACE2 is measured by its ability to cleave a fluorogenic peptide substrate, Mca-YVADAPK(Dnp)-OH.

Specific activity

≥ 1,000,000 units/mg ACE-2

Unit definition

One unit is defined as the amount of enzyme required to cleave 1 picomole of the fluorogenic peptide substrate, Mca-YVADAPK(Dnp)-OH in one minute, in 37 °C, pH 7.5.

Purity

≥ 95% (SDS-PAGE)

Biotinylation

≥ 90% (gel shift assay)

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Briefly centrifuge the vial before opening. Reconstitute in water to a concentration of 0.1 mg/mL. **Do not vortex**. This solution can be stored at 2–8 °C for up to 1 week. For extended storage, it is recommended to store the reconstituted solution in working aliquots at −20 °C.

Storage/Stability

Store the lyophilized product at −20 °C. The product is stable for at least 2 years as supplied.

References

1. Donoghue, M. *et al*., A Novel Angiotensin Converting Enzyme-Related Carboxypeptidase (ACE2) Converts Angiotensin I to Angiotensin 1-9. *Circ. Res*., **87(5)**: e1-e9 (2000).
2. Chamsi-Pasha, M. *et al*., Angiotensin-Converting Enzyme 2 as a Therapeutic Target for Heart Failure. *Curr. Heart Fail. Rep.*, **11(1)**: 58–63 (2014).
3. Verdecchia, P. *et al.*, The pivotal link between ACE2 deficiency and SARS-CoV-2 infection. *Eur. J. Intern. Med.*, **76**: 14-20 (2020).
4. Hoffmann, M. *et al*., The novel coronavirus 2019 (2019-nCoV) uses the SARS coronavirus receptor ACE2 and the cellular protease TMPRSS2 for entry in target cells. *Cell*, **181(2)**: 271–280.e8 (2020).
5. Williams, V.R. *et al*., Angiotensin-converting enzyme 2 and renal disease. *Curr. Opin. Nephrol. Hypertens.* **27(1)**: 35-41 (2018).

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