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Product Information

Angiotensin Converting Enzyme-2, ACE2, human recombinant, expressed in HEK 293 cells

Catalog Number **SAE0064**
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
Recombinant human Angiotensin Converting Enzyme-2 (ACE2) is expressed in human HEK 293 cells as a glycoprotein with a C-terminal FLAG® tag and his-tag with a calculated molecular mass of 85.9 kDa. The DTT-reduced protein migrates as a 90–120 kDa polypeptide on SDS-PAGE due to glycosylation.

ACE2 is the first known human homologue of angiotensin-converting enzyme (ACE).[1] It was identified from 5′ sequencing of a human heart failure ventricle cDNA library.[1] ACE2 has an apparent signal peptide, a single metalloprotease active site, and a transmembrane domain. The metalloprotease catalytic domains of ACE2 and ACE are 42% identical, and comparison of the genomic structures indicates the two genes arose through duplication.[1] ACE2, like ACE, is a membrane-associated and secreted enzyme expressed predominantly on endothelium, but unlike ACE, it is highly restricted in humans to heart, kidney, and testis.[1]

ACE2 is a new component of the renin-angiotensin system (RAS).[2] Accumulating evidence shows ACE2 provides protective effects in peripheral tissues and has great potential for the treatment of RAS-related diseases.[2] The emerging concept is that an imbalance in ACE2/Ang-(1–7) and ACE/Ang-II axes is critical in the development of cardiovascular diseases. The central role of ACE2, therefore, appears to counter ACE activity by reducing Ang-II bioavailability and increasing Ang(1-7) formation.[3]

This protein is produced in human cells without the use of serum. The human cell expression system allows human-like glycosylation and folding, and often supports higher specific activity of the protein. This product is supplied as a 50 μg lyophilized powder. It is lyophilized from 0.22 μm filtered solution in PBS, pH 7.4.

Purity: ≥95% (SDS-PAGE)

Specific activity: ≥1,000,000 units/mg ACE2

The specific activity of recombinant ACE2 is measured by its ability to cleave a fluorogenic peptide substrate, Mca-YVADAPK(Dnp)-OH.

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.

Endotoxin level: ≤1 EU/μg ACE2 (LAL)

Precautions and Disclaimer
This product is 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 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. Xia H, and Lazartigues E., Angiotensin-converting enzyme 2: central regulator for cardiovascular function. *Curr. Hypertens. Rep*., **12(3)**, 170-5 (2010).
3. 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).

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