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Product Specification Sheet

Human Angiotensin I Converting Enzyme-2 (ACE-2) Protein

Cat. ACE25-R-10 Human **Recombinant** ACE-2 protein **SIZE**: 10 ug

Renin-Angiotensin System (RAS) is a critical regulator of blood pressure homeostasis. The protease renin cleaves angiotensinogen into inactive decameric peptide angiotensin-I (Ang-I). Angiotensin-converting enzyme (ACE) then cleaves C-terminal dipeptide from Ang-I to form an active octamer angiotensin-II (Ang-II), which can contribute to hypertension by promoting vascular smooth muscle vasoconstriction and renal tubule sodium reabsorption. ACE can also cleave many other small peptides including the vasodialating peptide bradykinin into inactive fragment, cleave Alzheimer amyloid beta-peptide (Abeta), retard Abeta aggregation, deposition and fibril formation. ACE mutant mice display spontaneous hypotension, partial male infertility and kidney malformations. ACE is found in somatic (s-ACE) and testicular/germinal (t-ACE) isoforms. The products of renin and ACE catalysis, namely Ang1-10 and Ang1-8 can also be by another peptidase, ACE-2 to Ang1-9 and Ang1-7, respectively. ACE-2 and ACE (s-ACE and t-ACE) are made as transmembrane (TM) proteins but these enzymes also exist as soluble, truncated forms lacking the TM and cytosolic domains.

ACE-2 (also known as ACE-2 and ACE homolog, ACEH) gene has been mapped at human chromosome Xp22. ACE-2 enzymes from human (805aa) and mouse (798aa) are single chain proteins with 40% seq homology to N- and C-terminal domains of ACE. However, in contrast to s-ACE, which consists of two catalytic sites, ACE-2 contains only one active site. Unlike s-ACE and t-ACE, which are dipeptidyl-carboxypeptidases, ACE-2 acts as a carboxypeptidase, cleaving single residue from Ang-I, generating Ang1-9 and a single residue from Ang-II to generate Ang1-7. ACE-2 can cleave angiotensin-I but not bradykinin and the enzyme activity is not inhibited by the ACE inhibitors. This enzyme is expressed highly in heart, kidney and testis and moderately in colon, small intestine and ovary. ACE-2 is an essential regulator of heart function because targeted disruption of this enzyme in mice results in severe cardiac contractility defect, increased angiotensin-II levels and upregulation of hypoxia-induced genes in the heart.

Source of Protein and Positive Control

A cDNA sequence encoding the ectodomain (aa 1-740) of the recombinant human angiotensin I converting enzyme-2 was expressed as a secreted protein with a COOH-terminal His tag in a murine myeloma cell line, NSO.

The 733aa residues rhACE-2 has a predicted molecular mass of approximately 85kD, By SDS-PAGE, the apparent molecular mass of the glycosylated protein is approximately 120 kD under both reducing and non-reducing conditions.

Recombinant Human (cat # ACE25-R-5/10) ACE-2 protein has low endotoxin level (<1.0 ng/1 ug of enzyme as determined by the LAL method). Measured by its ability to cleave a fluorescent peptide substrate, Mca-Y-V-A-D-A-P-K (Dnp)-OH (Cat # ACE65-P). Cleavage of the peptide substrate can be measured using excitation and emission wavelengths of 320nm and 405nm, respectively.

Formulation: Supplied frozen in 0.2 µm filtered solution of 25 mM Tris, 0.2 M NaCl, 5 µm ZnCl2, pH 8.0, at a concentration of 1.00 mg/mL (lot specific concn may be specified on the vial)..

Stability: 6-12 months at –20oC or below.

Shipping: -20oC for solutions.

General References: Tipnis, S. R et al (2000) JBC Vol. 275: 33238-33243; Crackower, M. A et al (2002), Nature 417: 822-828; Huang, L et al (2003) JBC Vol. 278: 15532-15540.

*This product is for in vitro research use only.

Related material available from ADI

Antibodies Angiotensin Converting Enzyme 1 (ACE1) , ACE-2 and recombinant proteins.

ACE25-R-10 71221A

India Contact:
Life Technologies (India) Pvt. Ltd.
306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi – 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444
Email: customerservice@lifetechindia.com Website: www.lifetechindia.com