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ACE Human

Angiotensin Converting Enzyme Human Recombinant
VAG0002

Product Overview

Name	ACE Human
Description	
Angiotensin Converting Enzyme Human Recombinant	
Accession (Primary)	P12821
Introduction	

ACE-2 (Angiotensin converting enzyme 2) an enzyme bound to cell membranes in various organs such as intestines arteries , lungs, heart & kidney. ACE2 an entry receptor of SARS coronaviruses as well as SARS-CoV-2,.The coronavirus spike (S) glycoprotein is a class I viral fusion antigen located on the external envelope of the virion that takes part in a critical part in viral infection by identifying host cell receptors and facilitating fusion of the viral and cellular membranes. 2 main domains in coronavirus S1 have been recognized, the N-terminal domain and C-terminal domain. One or the other and/or both S1 domains function as a receptor-binding domain. SARS-CoV + MERS-CoV equally use C-domain to attach their receptors.ACE2 is a type I transmembrane antigen with an extracellular N-terminal domain having the catalytic site and an intracellular C-terminal tail. ACE2 obtains a signal peptide, a transmembrane domain, and a single metalloproteinase active site containing an HEXXH zinc-binding domain. ACE-2 plays a role as a mono-carboxypeptidase which degrades Ang I to produce the nonapeptide Ang 1–9 and Ang II to create the heptapeptide Ang 1–7.

Source

CHO Cells

Physical Appearance

Sterile Filtered clear solution.

Formulation

ACE2 Human protein solution is supplied in 50mM Tris-HCl, pH7.5, and 90mM glycine.

Stability

ACE-2 Human Recombinant Protein is shipped on ice packs. Upon arrival, Store at -20°C.

Purity

Protein is >95% pure as determined SDS-PAGE.

Biological Activity

ACE2 activity was measured by its binding ability in a functional ELISA. The immobilized Recombinant Human ACE2

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protein binds to SARS CoV2 Spike protein Receptor Binding Domain at 2ug per ml.

Background

Research on Angiotensin Converting Enzyme 2 Human Recombinant: Structure, Function, and Therapeutic Implications. Introduction: Angiotensin Converting Enzyme 2 (ACE2) is a key enzyme involved in the renin-angiotensin system (RAS) and plays a crucial role in cardiovascular homeostasis. In recent years, ACE2 has garnered significant attention due to its pivotal role as the cellular receptor for the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus responsible for the global COVID-19 pandemic. This research paper aims to provide an overview of ACE2, including its structure, function, and potential therapeutic implications. ACE2 is a transmembrane protein that belongs to the zinc metalloprotease family. It is expressed in various tissues, including the cardiovascular system, lungs, kidneys, and gastrointestinal tract. ACE2 acts as a counter-regulatory enzyme within the RAS by catalyzing the conversion of angiotensin II (Ang II) to angiotensin-(1-7) (Ang-(1-7)). This enzymatic conversion results in the downregulation of the vasoconstrictor effects of Ang II and the promotion of vasodilation, anti-inflammatory responses, and tissue protection. The recent emergence of SARS-CoV-2 has highlighted ACE2's role as the primary receptor for viral entry into host cells. The binding of the viral spike protein to ACE2 enables the virus to enter and infect target cells, primarily in the respiratory system. This interaction has raised interest in ACE2 as a potential target for therapeutic interventions against COVID-19. In addition to its involvement in viral infections, ACE2 has been implicated in various cardiovascular and respiratory disorders. Dysregulation of ACE2 expression and activity has been associated with hypertension, heart failure, acute respiratory distress syndrome (ARDS), and pulmonary fibrosis. Understanding the intricate balance of ACE2 activity and its interaction with the RAS is crucial for elucidating the pathophysiology of these diseases and developing targeted therapeutic approaches. Several therapeutic strategies targeting ACE2 have been explored, including the development of ACE2-based recombinant proteins. Recombinant ACE2 has shown potential as a therapeutic agent by acting as a decoy receptor for SARS-CoV-2, thereby preventing viral entry into host cells. Moreover, modulation of ACE2 expression and activity holds promise for managing cardiovascular and respiratory diseases. In conclusion, Angiotensin Converting Enzyme 2 (ACE2) plays a critical role in cardiovascular homeostasis and has emerged as a key player in the context of viral infections, particularly the COVID-19 pandemic. This research aims to provide insights into the structure, function, and potential therapeutic implications of ACE2. By unraveling the complexities of ACE2 biology, we strive to pave the way for the development of innovative therapeutic strategies against COVID-19 and other related diseases.

Precautions

ACE Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P12821)