

Literature mining based profiling of angiotensin-converting enzyme 2

Neelam Krishna, Shivani Tyagi, Pramod Katara

Comp-Omics Lab, Centre of Bioinformatics, University of Allahabad, City-Prayagraj, 211002 (UP) India

E-mail: pmkatara@gmail.com, pkatara@allduniv.ac.in

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Abstract

COVID-19, caused by zoonotic coronavirus SARS-CoV-2, is not a first coronavirus infection, prior to this, two severe coronavirus infections were already faced by the humans at different parts of the world. COVID-19 is found to be more severe than its previous counterparts and cause respiratory syndrome along with some other pathophysiology effects. The main human protein which used by SARS causing coronavirus (SARS-CoV and SARS-CoV-2) is angiotensin-converting enzyme 2 (ACE2), a key member and regulator of RAS. Coronavirus shows a significant affinity with the ACE2, spike protein of the virus participate in this crucial interaction and initiate the infection cycle of the SARS. This ACE2 plays a very significant role in RAS, which directly affect the pathophysiology of humans, mainly of respiratory and cardiovascular diseases. Blockage or down-regulation of ACE2 can easily block the virus entry in the cells, but due to the other important role of the ACE2, the human system cannot afford its suppression or blockage. Due to its importance, it is required to understand the physiology and pathophysiological role of the ACE2, which can help to develop therapy against the SARS. This report provides a detailed account of ACE2, and help to understand about it, which will help to plan a possible way to fight against SARS-CoV-2 and other coronaviruses.

Keywords angiotensin-converting enzyme-2; coronavirus; COVID-19; RAS; SARS.

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1 Introduction

This 20th century is a witness of three severe coronavirus infections, i.e., SARS (2003; SARS CoV, Peiris et al., 2003), MERS (2012; MERS-CoV, Zaki et al., 2012) and COVID-19 (2019; SARS-CoV-19). All these three were caused by animal originated coronavirus that transmitted to humans. In all three infections, it has been observed that coronavirus first entered animals to humans and then spread through infected-human-to-human transmission process with close contact. The recent coronavirus disease (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It found more severe than SARS

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