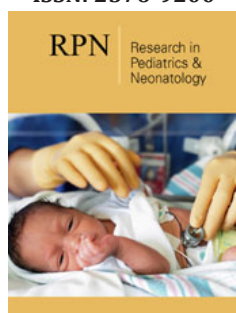


Does COVID-19 Uses ACE-2-Receptors of the Epidermis As Entry into the Body?

Bittmann S*, Weissenstein A, Villalon G, Moschüring-Alieva E, Bittmann L and Luchter E

Department of Pediatrics, Germany

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***Corresponding author:** Bittmann S, Head of the Department of Pediatrics, Ped Mind Institute, Gronau, Germany

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Introduction

Since the outbreak in China in December 2019 researchers searching for adequate therapy to control viral spreading and to inhibit COVID-19 effectively. To date, no effective drug to treat this severe viral infection was found. Publications about angiotensin II receptor blocker reveal a new effective method to think about in treating COVID-19 [1-5]. Moreover, different therapy options were started to stop the devastating potential of COVID-19 worldwide. Antibody-rich donated plasma from survivors, different inhibitors are part of analysis to stop the entry of the virus into the cell and disturb the connection between SARS-CoV-2 and angiotensin-2 receptor binding. Angiotensin II and the receptor play an important role in cell entry of COVID-19. For cell entry COVID-19 needs the presence of a serine protease TMPRSS2 and cathepsin L [6-9].

ACE-2 receptors are found in different organs and can induce individual organ failure in COVID-19 patients, like it was described a few days ago in brain tissue by Jiao et al. & Poyiadji et al. [3,11]. In neurotropic tissues, COVID-19 seems to trigger viral necrotic encephalitis. To date, COVID-19 seems to get part of the human body by docking to ACE-2 receptors in the oral cavity and the tongue [12]. Both studies of Stecklings et al. examined the expression of Angiotensin receptors in the human skin, the possible synthesis of Angiotensin II (Ang II) at this point and looked for the first insight into the physiological functions. AT1 and AT2 receptors were found in the epidermis and in the dermal vascular walls [10,13]. The same expression pattern was found for Angiotensinogen, renin and Angiotensin Converting Enzyme (ACE). All components could be proved, in addition, at mRNA level in cultured primary keratinocytes, melanocytes, with the exception of the AT2 receptors in melanocytes [10,13].

Conclusion

In conclusion, studies have shown that ACE2 and ACE-2 receptors were found in the skin, especially in the epidermis and the dermal vascular walls, suggesting that COVID-19 could find an entry into the human body by epidermal contact, then docking to ACE 2 in the skin [10,13]. If this hypothesis is correct, all medical staff must work with skin protective gear and all humans should take care that closer skin contact could transmit COVID-19. Further research in this field is necessary.

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