Original Research Paper

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Clinical Research

NEW ANTIBODY CONCEPT FOR COVID-19

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KEYWORDS :

INTRODUCTION

Coronavirus pandemic is an ongoing pandemic caused by severe acute respiratory coronavirus2 (SARS)(WHO). More than 8.8 M cases have been reported in 188 countries all over the world including 4.64 lakhs death cases. More than 4.37M recovery cases have also been reported ("COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)". ArcGIS. Johns Hopkins University.) till 21 June 2020. On 31December 2019 the health authority of China reported the WHO that a clusters of viral pneumonia cases (cause- unknown) has been detected in Wuhan. On January 30 2020, WHO declared it as a Public Health Emergency of International Concern (PHEIC). On 11th march 2020, WHO declared as Pandemic(www.wikipedia.com)

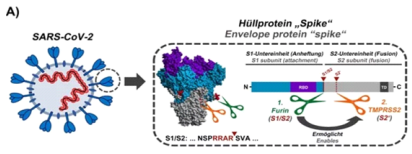
ANTIBODY CONCEPT

We know that COVID-19 has spread all over the world and no satisfactory medicine has been discovered till now. In my study and research, I have found one antibody which may prevent the SARS COVID-2. The name of the antibody is anti furin antibody(B-6) (www.scbt.com/home). It is a mouse monoclonal IgG1 (Kappa light chain) Furin antibody provided at 200 micro- gram/ML. It raises against amino acids 575-794 of Furin of human origin. (SANTA CRUZ BIOTECHNOLOGY, INC.)

Highlights

1. The spike protein of SARS-CoV-2 a multibasic S1/S2 site
2.The host cell protease furin cleaves the SARS-CoV-2 spikeprotein at the S1/S2 site
3. Cleavage at the S1/S2 site is essential for spike-driven viralentry into lung cell.

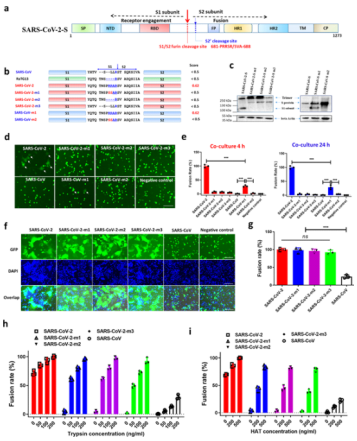
(Hoffmann et al., 2020, Molecular Cell 78, 1–6 May 21, 2020 ª 2020 Elsevier Inc.
https://doi.org/10.1016/j.molcel.2020.04.022)



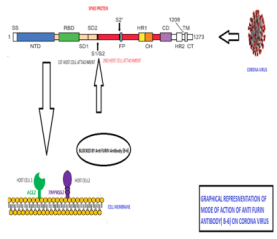
Schematic representation of SARS-CoV-2, the viral spike protein and the cleavage sites for furin (green, S1/S2 position) and TMPRSS2 (orange, S2' position). (B) First, in already infected cells, the enzyme furin cuts the spike protein at the S1/S2 site. The spike protein then mediates viral attachment to a new host cell. In order to efficiently enter the cell, the spike protein still needs to be activated by the enzyme TMPRSS2. Activation by TMPRSS2 is only possible if the spike protein has previously been cleaved by furin. Credit: Markus Hoffmann.

The function of furin cleavage site in SARS-CoV-2-S mediated fusion. (Schematic representation of SARS-CoV-2 S protein and the location of S1/S2 and S2′ cleavage site. SP, signal peptide; FP, fusion peptide; HR, heptad repeat domain; TM, transmembrane domain; CP, cytoplasmic domain) (Shuai Xia, Qiaoshuai Lan, Shan Su, Xinling Wang, Wei Xu, Zezhong Liu, Yun Zhu, Qian Wang, Lu Lu Shibo Jiang Signal Transduction and Targeted Therapy volume 5, Article number: 92 (2020))

According to the image, the length of furin cleavage between s1 & s2 subunit is near about 700 on the basis of protein sequences. So the anti furin antibody (B-6) blocks the furin cleavage and inhibits the signal transmission from heptad repeat domain (HR) to receptor binding domain (RBD) because the antibody raises against amino acids 575-794 of Furin of human origin.



GRAPHICAL REPRESENTATION



- S1 domain of spike protein attaches to ACE2 receptor of cell membrane & waits for the signal for the second attachment with TMPRSS2.
- There is a s1/s2 cleavage site presented in spike protein.
- Through s1/s2 cleavage signal transfer to s1 domain.
- Anti furin antibody (B-6) blocks the s1/s2 cleavage.
- For that reason signal cannot transfer to s1 domain & fusion will stop.
- The inactive parts remains until the host exists.

CONCLUSION: Anti furin antibody (B-6) is a readymade antibody which may prevent the entry of corona virus into cell. If we collect from SANTA CRUZ BIOTECHNOLOGY, then we can use it for clinical trials. If we succeed, then it will be used for therapeutic purpose for the procurement of the patient.

REFERENCES

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