CPQ Microbiology (2021)
Letter to Editor

Peptide Mimics as Potential Drugs for COVID-19

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Received: 28 December 2021

Published: 29 December 2021

Keywords: *Omicron; Antibodies; COVID-19*

Dear Editor,

It seems to me that the omicron, with all its monstrosity, is just a trailer for what is yet to come in the next stage. The problem focuses on the antibodies that the body produces, making it difficult for the virus to transfer its genetic material to "kidnapping" the various intracellular mechanisms to produce a host in the host cells the RNA and proteins of the virus. The transition has hitherto been the most common receptor in all of our body cells ACE2-. The protein of the antibodies acts as a mechanical inhibitor (SPIKE) of the virus in binding to the receptor. And like many good things, this way of stopping will at some point come to a dead end.

Current drug treatment is limited. All the antiviral products tested are a source of palliative treatment but not a cure for the disease. Preventing the process of infection of the virus with the receptor and preventing the transfer of genetic material within the receptor are the focus of the researchers' efforts. About 10 drugs are known to block the receptor. These are the drugs from the Losartan family which are used in the fight against hypertension. But all the efforts of researchers at the University of Minnesota have so far run aground.

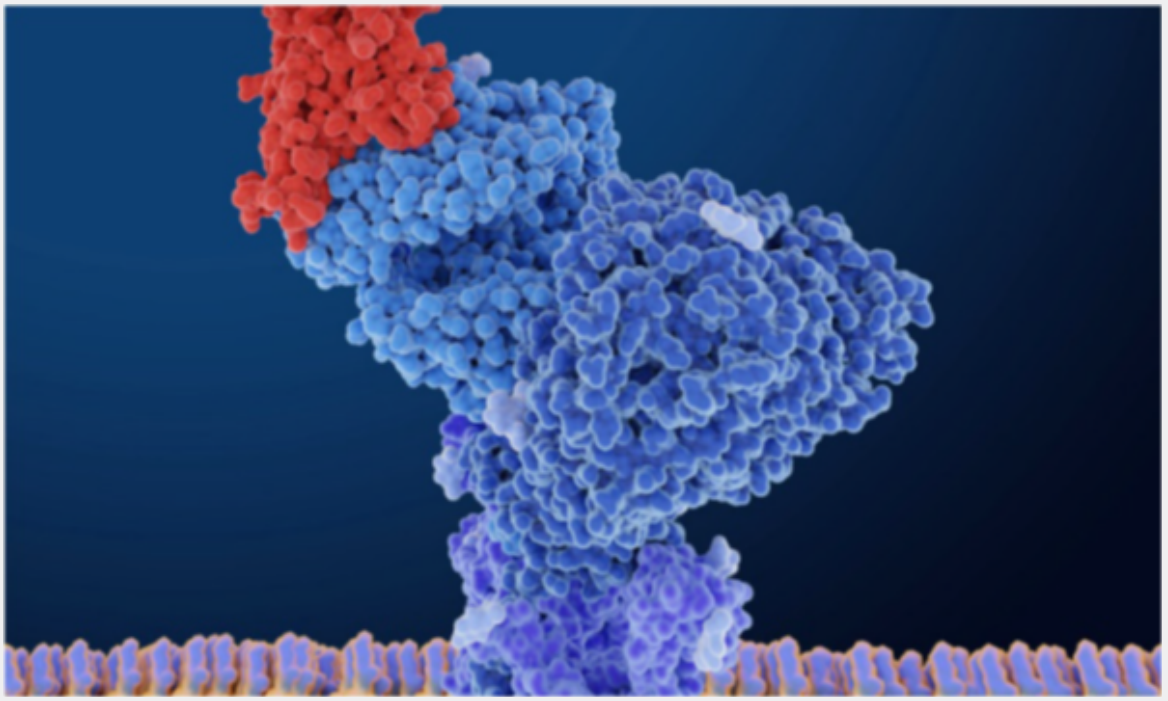

Figure: *Approach predicts novel 'protein partners' that could contribute to COVID-19 symptoms (credit ref. [1])*

COVID-19, ACE2 and Protein Partner

The method used by the researchers revealed several protein partners nominated for ACE2 that were not previously identified as ACE2 interactives but may have a direct impact on the complications experienced by people infected with the virus. These COVID-related complications can include excessive blood clotting as well as an over-inflammatory response known as a "cytokine storm" - both of which can cause tissue and organ damage.

For example, one hallmark of severe COVID-19 is abnormal blood clotting throughout the body. The team's study revealed unique links between ACE2 and key proteins involved in the coagulation pathway. Another protein, Clusterin, which plays a significant role in "quality control" in the blood by removing incorrect proteins, develops highly together with ACE2 - suggesting that they interact biologically with each other. In addition, several proteins involved in cytokine signaling appear to be evolving along with ACE2. "We suggest that ACE2 has new protein interactions that are disrupted during SARS-CoV-2 infection, contributing to the spectrum of COVID-19 pathologies," says Verne. The finding that ACE2's evolutionary partners are involved in blood clotting and cytokine signals is consistent with this possibility.

"These candidate protein interactions will have to be validated," says Verne. "But if supported, our findings could inform the development of better therapies and treatments for COVID-19 and chronic complications that may arise."

As an evolutionary geneticist, Vern focuses on the interaction of genomes in symbiotic or parasitic relationships. When the COVID-19 epidemic struck, Verne received a grant from the National Science Foundation's rapid research program to study ACE2's protein interactions and the protein network that develops in it. Meanwhile, the University's Nathaniel and Helen Vish Research Foundation has helped support the participation of Verla and Chang.

"Working on this project was a great opportunity for me," says Varla, the first author of the study, who began researching protein-protein interactions at Verne Laboratory during his sophomore year at Rochester. "Once we discovered the partners in the pace of evolution of ACE2, their potential clinical relevance was clear.

The selectivity to the virus alone is the highest obstacle. Since it is the same receptor that is also used for many life actions and in all body parts. Its full braking will do more harm than good. But the hope to find the golden route by which dealing with this immense difficulty is not forsaken yet.

Pfizer COVID Antiviral [2] Paxlovid [3] gets Emergency Clearance

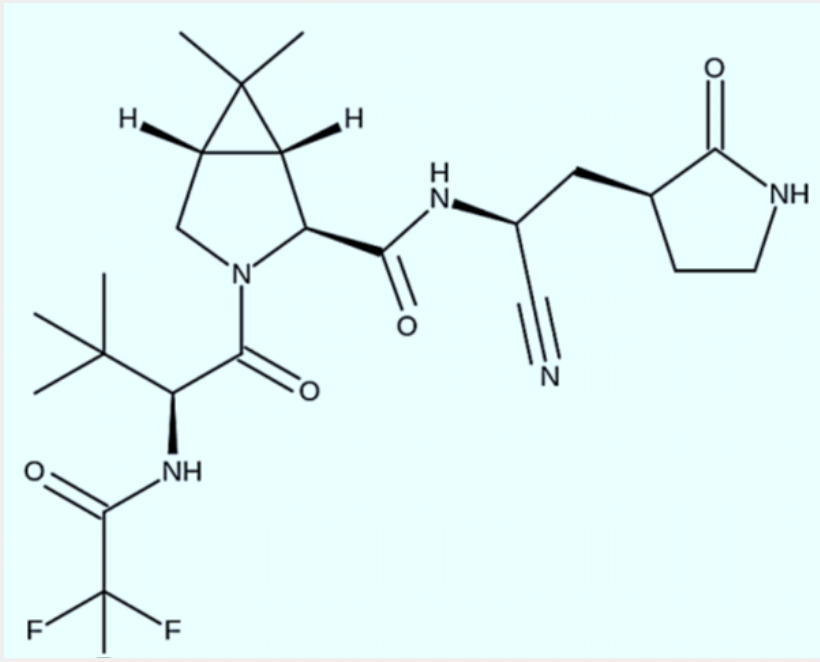

Figure: *A carbon skeleton diagram of PF-07321332 (Paxlovid). Image Source: Wikimedia Commons*

While the FDA said vaccines are the first line of defense against COVID, the drug provides a new tool in the fight against the virus. While vaccines have been shown to be effective in preventing serious diseases from the virus, health care providers need drugs to treat tens of millions of people in the U.S. who have not yet been vaccinated.

Dr. Paul Opit, director of the Center for Vaccine Education at the Children's Hospital in Philadelphia and an FDA consultant, said the development is good news, but vaccinating unvaccinated people remains the ultimate goal.

"Is there a higher chance of taking this drug than getting vaccinated? I think the answer to that question is yes," Opit said. "So it has value for those 40 million, 50 million people in this country who just refuse to get vaccinated. I mean, it might keep them out of the hospital."

The U.S. has purchased 10 million courses for Pfizer's treatment, Paxlovid, in a $ 5 billion deal. President Joe Biden said in November that his administration is working to ensure treatments are free and accessible. Biden said last month that shipping would begin by the new year and continue through 2022.

Mark has contracted with the U.S. government to provide at least 3 million courses of its pill, Molnofair, which is still awaiting approval, for $ 2.2 billion. The FDA declined to comment on Mark's drug.

Pfizer treatment is given in two 150 mg tablets together with a 100 mg tablet of the HIV drug, ritonavir, twice daily. The HIV drug helps to slow down the patient's metabolism, allowing Paxelvide to remain active in the body at higher concentrations for a longer period of time.

Merck's 800 mg pill is taken every 12 hours for five days after the onset of symptoms. The drug was developed with Ridgeback Most Petics.

CNBC Health and Science

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Pfizer's Pill Was 89% Effective in the Previous Ones

The simplistic approach of the previous Israeli prime minister Netanyahu that by instructing the Biological Institute to prepare an effective vaccine today looks like throwing pebbles into the sea. This approach characterizes the whole treatment of this challenging issue. However, it is a serious and complicated issue, not clarified with a simplistic and superficial approach from the scientific perspective. It is not "money from helicopters." Here they struggle with the way life was created. And the system is much more complex counters than "money from helicopters". Too bad for the 200 billion that was distributed like that just for fun. There is certainly reason to fear that this was done out of selfish considerations.

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