

How Micar21 fight COVID-19

Everyone is talking about Coronavirus right now. You are among the Bulgarian researchers who have discovered a molecule that you know can cure the dangerous strain. What is this molecule? On what principle does it work? When did your research work begin and what provoked you to work in this direction?

We all know that publishing a scientific team's achievements in a reputable, high-impact scientific publication is quite important. Therefore, I will afford a little preface. There are 7 known types of coronaviruses. On March 4, 2020, the complete structure of COVID-19 discovered by cryogenic electron microscopy was published in Science Journals. This opens many opportunities for scientists to create vaccines and medicines.

The global scientific community had been heading for the CCR5 associated with HIV. On 08/03/2020, our scientific team drew attention to our leading molecule from Micar's pipeline, which is in the immune system and we found the first-class drug molecule in CCR7 (namely lymph node metastases - which is the core of our main pipeline). The molecule in question has been validated three times in Thermo Fisher Scientific & Eurofins. What we're doing right now is: developing a potent CCR7-only antagonist to one that has dual action, including CCR5 inhibition.

In parallel, we began to explore the fundamental science that many teams around the world are working on. The Cell Discovery DOI article: <https://doi.org/10.1038/s41421-020-0147-1>, directed us to the second path to solving the COVID-19 problem. Namely the connection to ACE2. Here we are considering finding a suitable and specific inhibitor to prevent ACE2 from binding to COVID-19.

The third approach emerged, based on an article from 03/09/2020 in Science Journals DOI: 10.1126 / science. abb2762 on the connection to SLC6A19. Here we already have a patented molecule as well as an author's article (Micar21 ACS Med Chem Lett. 2019 May 22; 10 (6): 904-910). Next



step is to optimize to the clinical stage the already discovered Micar21 drug innovative molecule inhibitor of SLC6A5 to that of SLC6A19.

How did you get to your discovery? Tell us a little more about Micar Innovation (Micar21 - Drug Discovery Platform) business.

*The company was founded 4 years ago, and we spent the first two years fully optimizing our drug molecule design platform. We gradually began to improve each step along the way to creating a new molecule. Each stage is accompanied by a specific innovation, an improvement that we always validate through scientific articles in reputable scientific journals with the highest impact. In parallel, we were able to build a strategy that is based on investments in creating our own portfolio of new drug molecules, which are basically the first in the class and become visible to the world. Different financial analytic companies are **positioning Micar21, alongside major pharmaceutical companies, as players in the 2020-2030 market.***

It is also important to note that in November 2019, we published an article in Nature Scientific Reports showing the details of the innovative platform for new drug molecules. Working on our portfolio of unique first-in-class molecules, we found a brilliant molecule in the field of CCR7 (lymph node metastases). We conducted tests at reputable research laboratories that validated and provided proof of successful results. Then we did other biological tests, using different models throughout the immune system CCR1 - CCR10, again showing very good activity and selectivity. This is how, we come to the first approach to combat coronavirus. The other molecule for which we have a scientific article in the Journal of Medicinal Chemistry and a patent was exclusively created for chronic pain. The fundamental science has emerged that the coronavirus is linked to the pathway of this protein, we begin to examine the indication for coronavirus - which is our third approach. In short, our goal is to defeat the Coronavirus through a threefold approach.

Has your discovery been clinically tested? And can such treatment be given to patients giving a positive test for Coronavirus?

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Right now, our goal is to ensure that the molecule/s can enter the Preclinical Phase. To continue our fantastic scientific and research work we need funds. Great deal of our efforts goes to this activity too.

How can your discovery help treat the dangerous virus?

Most pharmaceutical companies have different approaches. What sets us apart from others is our platform for discovering new drug entity molecules- innovative platform that is fast and accurate. Our triple approach, in line with the latest developments in fundamental science can be validated rapidly, since everything is in-house.

Have you been sought by the health authorities or other international units for your discovery?

Currently, the entire Micar21 team is working to connect and communicate with various service providers and institutions in Bulgaria and abroad. Unfortunately, despite many promises made on the air by various media outlets, there is virtually no responsible ministry or minister who has contacted us. We have written to everyone asking for support and we hope that we will really get a response and real assistance.

We have drawn up an action plan. We are constantly communicating with colleagues from different countries. Perhaps this is the moment to thank the Bulgarian scientific community outside our country, which offers its assistance and with whom we are working together.

We are also launching the application process for European programs, such as the EIC Accelerator, and we are gathering support for applying for an IMI program. We are currently in the phase of describing the project proposal, collecting letters of support, forming a partner network and reviewing the resources we must move to the next phase for Preclinical Testing. We hope that the European institutions will be much more active and responsive than the Bulgarian ones.



Micar Innovation
Drug Discovery Factory

Is it possible that Bulgarian science contributes to the fight against infection?

We believe that in Bulgaria we have a strong scientific capacity and enthusiasm among entrepreneurs engaged in private research and to pioneer global innovations. Our company is one of the creators of Biotechnology and Health Cluster Bulgaria, in which we are trying to unite and support our bioscience community. Due to our cluster's activities efforts, we know that Bulgaria have great laboratories and equipment, which we believe that we will be able to work in synergy with companies like ours, even more so that the current emergency needs to unite and realize maximum development of our molecules to showcase Bulgaria. We are constantly looking for a partnership among fellow scientists, universities and private investors globally. Thank you for your consideration.