

PL3. STUDY OF THE IMMUNOGENICITY OF COMBINATION OF RECOMBINANT RBD (OMICRON) AND NUCLEOCAPSID PROTEINS OF SARS-COV-2 EXPRESSED IN *PICHIA PASTORIS*

Shakhnoz AZIMOVA¹, Sobirdjan SASMAKOV¹, Farkhod ESHBOEV¹, Jaloliddin ABDURAKHMANOV¹ *, Oybek ASHIROV¹, Shukhrat KHASANOV¹, Artyom MAKHNYOV¹, Orzigul ALIMUKHAMEDOVA¹, Elvira YUSUPOVA¹, Galina PIYAKINA¹, Saidazim IKRAMOV¹

¹S.Yu. Yunusov Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan, 77, Mirzo Ulugbek Str., 100170, Tashkent, Uzbekistan

*Corresponding Author. E-mail: jaloliddin0919@mail.ru

SARS-CoV-2 is the virus responsible for the COVID-19 pandemic. It is a novel coronavirus belonging to the *Coronaviridae* family, which includes other coronaviruses known to infect humans, such as SARS-CoV and MERS-CoV. SARS-CoV-2 is an enveloped, single-stranded RNA virus with a positive-sense genome. It is a beta-coronavirus, characterized by its crown-like appearance under electron microscopy due to spike proteins on its surface. These spike proteins play a crucial role in the virus's entry into host cells.

Obtaining recombinant RBD and Nucleocapsid proteins of SARS-CoV-2 in the *Pichia pastoris* system is a strategy that has been explored for the development of vaccines against COVID-19. *Pichia pastoris* is a yeast expression system widely used for the production of recombinant proteins due to its ability to perform post-translational modifications and produce high yields of protein.

In this research, the genes encoding the RBD and Nucleocapsid proteins of SARS-CoV-2 were successfully inserted into the yeast *Pichia pastoris*. Additionally, protocols for isolating and purifying the desired RBD and Nucleocapsid proteins were established. To assess their immunogenicity, the purified proteins were administered to mice, and the specific IgG antibody responses were analyzed using ELISA. These findings suggest that the expressed proteins have the potential to be utilized as candidates for the development of vaccines or diagnostic tools targeting the Omicron variant of SARS-CoV-2.

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