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Development of new strategies against SARS-CoV-2/COVID-19

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ABSTRACT

The main goal is connected with suppression of the cellular penetration and/or replication of *SARS-CoV-2*/COVID-19, as well aswith generation of adequate anti-virus immune reaction, both in vitro and in vivo. For this goal, molecular vaccines against othervirus protein(s), as for instance, against gene, coding virus membrane (M) protein or against virus gene, coding viral envelope (E) protein, but also specific siRNAs against the virus gene, coding viral Spike (S) protein, should be developed and tested.Additionally, taking in consideration the eventual changes in many physical and chemical properties of the viral particle after its connection with respective generated antibodies against any of the mentioned proteins, probability for connection of the virion with the cellular receptor by viral S protein would eventually also be prevented. In this connection, the main idea is directed to application of strategies of priming with molecular vaccine against any of the viral genes, coding the mentioned above proteins,and boosting with specific siRNAs against virus gene, coding viral S protein. Both siRNAs and molecular vaccines should be constructed and applied by ways, by which maximal safety for the cell and the organism to be achieved. So, in vitro-incubated cells should be inoculated with viral strain with RNA-genome (if is possible, belonging to *Coronaviridae* family), which shouldthen be treated with appropriate siRNAs against the virus gene, coding viral S protein, necessary about viral penetration in the cell. Molecular vaccines against other virus protein(s) should also be designed. Subsequent evaluation on the in vivo-influence of the tested siRNAs against virus S protein and molecular vaccines against other viral protein(s) on appropriate experimental animals, both non-infected and previously infected with the same RNA-viral strain, should be performed. After performance ofall steps, evaluation on the in vivo-influence of the tested siRNAs against virus S protein and molecular vaccines against other viral protein(s) on appropriate immunodeficiency rodents as NOD or SCID mice is necessary, among which should also be available sub-groups, previously infected with the same RNA-virus strain.

BIOGRAPHY

The main goal in the work of Iskra Sainova is directed to balanced activity between oncogenes and tumor-suppressor genes, but alsobetween the protein products of both gene types, on cellular and organism levels. The first step was made during the preparation of her PhD-thesis, and it was connected with development new methods for application of viral strains for production of gene-engineering vaccines, but also as vectors for transfer of nucleotide sequences. She works in the same field to present. In the current time period, in connection with the situation with *SARS-CoV-2*/COVID-19, the same idea is directed to suppression of virus genes in the virus RNA-genome by appropriate siRNAs, as well as with development of appropriate anti-virus molecular vaccines. Iskra Sainova has 1 monography, over 100 research and revies publications, over 100 reviewers of research and review papers and over 180 citations.

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