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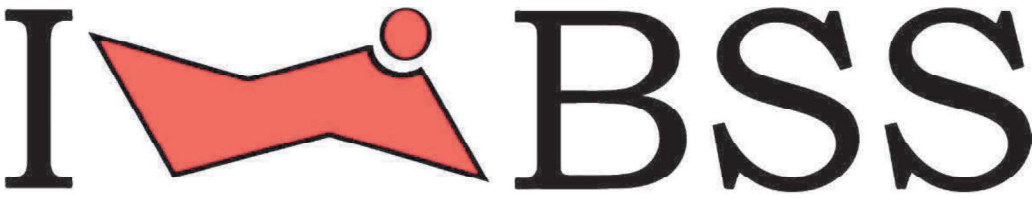

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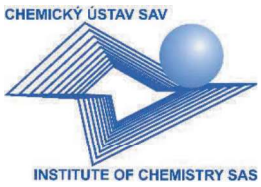

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STUDY OF N-GLYCAN SHIELD OF SARS-COV-2 SPIKE GLYCOPROTEIN

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Spike (S) glycoprotein of SARS-CoV-2 promotes virus entry into the cells using ACE2 receptors. S glycoprotein comprises two functional subunits responsible for binding to the host cell receptor (S1 subunit) and fusion of the viral and cellular membranes (S2 subunit) (1). S1 subunit is more exposed at the viral surface than S2 and is a subject of immune response. SARS-CoV-2 infection is controlled by a glycan gate (2). We employed two analytical approaches, MS MALDI-TOF/TOF and lectin-based glycoprotein microarray (MA) to determine the glycan pattern on a recombinant SARS-CoV-2 spike glycoprotein S1 expressed in HEK293 mammalian cells. MALDI MS provided identification of N-glycans presented on the S1 glycoprotein after their enzymatic release. Lectin-based MA enabled mapping the composition of glycan shell of S1 glycoprotein by determination of the interactions of biologically accessible glycans with panel of lectins. The results obtained by both methods were complementary, and also in agreement with the data reported elsewhere (3, 4). The glycomic studies are important for better understanding of SARS-CoV-2 acting, vaccine development and treatment.

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