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Influenza hemagglutinin and Ebola glycoprotein fragments characterisation and mutual interaction revealed by biophysical methods

Rene Kizek^{1,2}, Petr Michalek^{1,2}, Ondrej Zitka^{1,2}, Ludmila Krejčova^{1,2}, Lukas Richtera^{1,2}, Natalia Cernei¹, Pavel Kopel^{1,2}, Zbynek Heger^{1,2} and Vojtech Adam^{1,2}

¹Mendel University, Czech Republic

²Brno University of Technology, Czech Republic

Characterization of protein moieties can reveal important properties which can determine their biological fate from the perspective of their detection or possible interaction with binding partners. For our study, we employed substantial domain of influenza surface antigen hemagglutinin (HA)-sialic acid binding region. The N-terminal region of GP1 of Ebola which is critical for receptor binding referred to as the receptor-binding domain was employed for this study too. The aim of this study was to determine binding interaction of each of fragments with paramagnetic particles (PMPs). For analysis it is required their resuspension in PBS buffer pH 7 (phosphate buffered saline) at a ratio of 40 mg PMPs and 1 ml PBS. After six washing steps with PBS of pH 7 and a volume of 250 µl using an external magnetic field, one of the six synthesized peptides (ZEV 1-6) was added to each type of prepared modified super paramagnetic particles (MAN 99, MAN 105, MAN 123 and MAN 128) and incubated. Then, the particles were separated with a magnet, the solution was pipetted off and the particles were again washed three times with PBS, pH 7.0. The sample was concentrated by nitrogen evaporation Ultravap RC at 60°C. The dried sample was resuspended in 250 µl of dilution buffer in the sodium cycle. Finally, the binding capacity of the individual peptide fragments Ebola glycoprotein (ZEV 1-6) with the certain type of modified particles was determined.

Biography

Rene Kizek is a Professor and Head of Laboratory of Metallomics and Nanotechnology, Mendel University in Brno and Vice-Head of Research Group Leader of Submicron Systems and Nanodevices in Central European Institute of Technology. His research is mainly focused on effects of metal ions in organisms and their roles in various pathological processes mainly tumour diseases. Further, his team is aimed at developing new types of nanomaterials and testing these materials for nanomedical and nanomedicine purposes. He is an author of more than three hundred ISI indexed papers with more than 7000 citations and H-index 45.

kizek@sci.muni.cz

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